

# **VAX/VMS Release Notes, Version 4.7**

Order Number: AA-KX23A-TE

**January 1988**

This document describes Version 4.7 of the VAX/VMS operating system and explains the method for updating a Version 4.6 system to Version 4.7. It lists and discusses system changes, new features, corrected problems, and restrictions in the use of the system.

**Revision/Update Information:** This new manual supersedes information contained in the *VAX/VMS Release Notes, Version 4.4*; the *VAX/VMS Release Notes, Version 4.5*; and the *VAX/VMS Release Notes, Version 4.6*.

**Operating System and Version:** VAX/VMS Version 4.7

**Software Version:** VAX/VMS Version 4.7

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maynard, massachusetts**

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## Preface

The *VAX/VMS Release Notes, Version 4.7*, describe Version 4.7 of the VAX/VMS operating system and explain the method for updating a Version 4.6 system to Version 4.7. This document lists and discusses changes to the system, new features, corrected problems, and restrictions in its use.

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## Intended Audience

This manual contains information of interest to all system users.

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## Document Structure

There are three chapters and one appendix.

- Chapter 1 contains instructions for installing the Version 4.7 update kit.
- Chapter 2 briefly summarizes each new or changed system feature. Because these release notes supersede the Version 4.4 through 4.6 release notes, this chapter describes new or changed features in Versions 4.4 through 4.7.
- Chapter 3 details fixes to known problems in the operating system. It describes restrictions that should be applied to the use of VAX/VMS Version 4.7 and contains miscellaneous technical notes as well.
- Appendix A lists the contents of the VAX/VMS update kit.

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## Associated Documents

In addition to the documents for which corrections and additions are presented in Chapters 2 and 3, you might find the following documents helpful while reviewing the new material presented in this manual:

- The *VAX/VMS Supplemental Information, Version 4.7*
- The *VAX/VMS System Manager's Reference Manual*
- The *Guide to VAX/VMS Software Installation*
- The *Guide to VAXclusters*
- The *VAX/VMS Operating System, Version 4.7 Software Product Description* (SPD 25.01.29)
- The *System Software Ordering Table* (SPD 28.98.xx)



## Preface

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### Conventions

The following conventions are observed in this document:

Convention	Meaning
<span style="border: 1px solid black; padding: 0 2px;">RET</span>	In examples, a key name (usually abbreviated) shown within a box indicates that you press a key on the keyboard; in text, a key name is not enclosed in a box. In this example, the key is the RETURN key. (Note that the RETURN key is not usually shown in syntax statements or in all examples; however, assume that you must press the RETURN key after entering a command or responding to a prompt.)
CTRL/C	A key combination, shown in uppercase with a slash separating two key names, indicates that you hold down the first key while you press the second key. For example, the key combination CTRL/C indicates that you hold down the key labeled CTRL while you press the key labeled C. In examples, a key combination is enclosed in a box.
\$ SHOW TIME 05-JUN-1988 11:55:22	In examples, system output (what the system displays) is shown in black. User input (what you enter) is shown in red.
\$ TYPE MYFILE.DAT . . .	In examples, a vertical series of periods, or ellipsis, means either that not all the data that the system would display in response to a command is shown or that not all the data a user would enter is shown.
input-file, . . .	In examples, a horizontal ellipsis indicates that additional parameters, values, or other information can be entered, that preceding items can be repeated one or more times, or that optional arguments in a statement have been omitted.
[logical-name]	Brackets indicate that the enclosed item is optional. (Brackets are not, however, optional in the syntax of a directory name in a file specification or in the syntax of a substring specification in an assignment statement.)
quotation marks apostrophes	The term quotation marks is used to refer to double quotation marks ("). The term apostrophe (') is used to refer to a single quotation mark.



# 1

## Installing the Version 4.7 Update Kit

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This chapter describes the procedures necessary for installing the Version 4.7 update to the VAX/VMS operating system. When you install the update kit, a Version 4.7 system is produced.

### 1.1 The Version 4.7 Kit

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The VAX/VMS Version 4.7 update kit consists of documentation, patches, and replacement files. It includes the following components:

- The *VAX/VMS Operating System, Version 4.7 Software Product Description* (SPD 25.01.29)
- The *VAX/VMS Release Notes, Version 4.7*
- The *VAX/VMS Supplemental Information, Version 4.7*.
- Distribution media in one of the following formats:
  - Nine-track, 1600 bpi magnetic tape for all processors, including the VAX 8530, VAX 8550, VAX 8600, VAX 8650, VAX 8700, and VAX 8800 processors.
  - Three RX50 diskettes for the VAX 8200, VAX 8250, VAX 8300, and VAX 8350 processors.
  - Four RX01 diskettes for the VAX-11/780, VAX-11/782, or VAX-11/785 processors.
  - Four TU58 cassettes for the VAX-11/725, VAX-11/730, and VAX-11/750 processors.
  - One TK50 tape cartridge for MicroVAXs and VAXstations that serve as boot nodes for Local Area VAXclusters.
  - One CDROM for VAXstations that serve as boot nodes for Local Area VAXclusters. (These release notes do not describe how to update to Version 4.7 from CDROM. See the leaflet supplied with your CDROM for special instructions.)

The software distribution media is composed of three save sets. Save-set A contains fixes that apply to both VAX/VMS and MicroVMS. Save-set B contains VMS-specific fixes and save-set C contains MicroVMS-specific fixes. The VMSINSTAL command procedure determines whether you are updating a VAX/VMS or a MicroVMS system and automatically applies the correct save sets.

Appendix A lists the patches, new images, and fixes contained in the Version 4.7 update kit.

# Installing the Version 4.7 Update Kit

## 1.1 The Version 4.7 Kit

### 1.1.1 Optional Software Products

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Version 4.7 affects the following optional software products:

- Local Area VAXcluster License Key — You must reinstall the license key for a Local Area VAXcluster after installing the Version 4.7 update.
- Volume Shadowing License Key — You must reinstall the volume shadowing license key after installing the Version 4.7 update.
- Workstation Software Product (VWS) — After installing the Version 4.7 update on your workstation, you must reinstall the Workstation Software product (VWS).

For more information about optional software products, see the *System Software Ordering Table* (SPD 28.98.xx). Documentation for a specific optional software product is shipped with that product.

### 1.1.2 Requirements

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The following cautions and restrictions *must* be observed for this update:

- The system must be running Version 4.6 prior to the application of the Version 4.7 update kit:
  - If the system being updated is not currently running VAX/VMS Version 4.6, you must upgrade it to Version 4.6 and install the Version 4.6 mandatory update before installing the Version 4.7 update kit.
  - If you are installing the VAX/VMS operating system on a new system, you must install Version 4.6 and the Version 4.6 mandatory update before installing the Version 4.7 update.
  - If your processor is a MicroVAX 3500, a MicroVAX 3600, a VAXstation 3200, or a VAXstation 3500 and you received the Version 4.6A kit, you must perform the following steps:
    - 1 Install Version 4.6 and the Version 4.6 mandatory update.
    - 2 Install the Version 4.6A update kit.
    - 3 Install the Version 4.7 update kit. This produces a Version 4.7A system, although all system messages, including the message you receive when you bootstrap the system, indicate that you are using Version 4.7. Section 2.1.1 contains instructions for changing the system welcome message to read Version 4.7A.

If your processor is a MicroVAX 3500, a MicroVAX 3600, a VAXstation 3200, or a VAXstation 3500 and you received the Version 4.7A kit, you must perform the following steps:

- 1 Install Version 4.6 and the Version 4.6 mandatory update.
- 2 Install the Version 4.7 update kit.
- 3 Install the Version 4.7A update kit. When you bootstrap the system, the message will state that you are using VAX/VMS Version 4.7A. All other system messages will indicate that you are using VAX/VMS Version 4.7.

# Installing the Version 4.7 Update Kit

## 1.1 The Version 4.7 Kit

- If you are updating a system in which the system disk is a shadow set member, see Section 4.4 of the *VAX/VMS Volume Shadowing Manual* before performing the update. Section 4.4 describes tasks to complete before applying the update to such a disk. After you finish the update, you must reapply the volume shadowing key.

---

### 1.2 How to Proceed

Proceed to Section 1.3 if you are updating a VAXcluster. Proceed to Section 1.4 if you are updating a Local Area VAXcluster. Proceed to Section 1.5 if you are updating a standalone system.

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### 1.3 Applying Updates to VAXcluster Systems

The high degree of sharing achieved among systems in a VAXcluster environment is the result of coordination at many levels of the VAX/VMS operating system. This level of coordination generally cannot be achieved across major or minor releases of the VAX/VMS operating system. Hence, all members of a VAXcluster system must run the same version (major and minor) of the VAX/VMS operating system. In addition, VAXcluster sites must be prepared to update all VAX systems in a cluster at the same time.

An understanding of the following terms is useful in understanding the discussions in this section:

Common system root	Directory structure, residing on a common system disk, containing the system files shared by several processors in a cluster environment
Private system root	Directory structure, residing in either a private or a shared system disk, in which the system files are used by a single processor in a cluster environment
System root	Generic term referring to either a common system root or a private system root

VAX/VMS Version 4.7 (or 4.7A) *cannot* coexist in a cluster with Version 4.5 or earlier versions of the operating system. Versions 4.7 (or 4.7A) and 4.6 (or 4.6A) may be intermixed in VAXcluster configurations but only for the purposes of incrementally updating the various systems in the cluster and testing the newly installed operating system on VAXcluster members.

During the time that two versions of the VAX/VMS operating system are operating in a cluster, you must consider the following factors:

- All systems booted from a common system root must run the same VAX/VMS version.
- When a VAX/VMS Version 4.7 system boots in the presence of a Version 4.6 or 4.6A system, the system console displays the following informational message:  
  
`%CSP-I-DIFSWVER, different versions of VAX/VMS exist in cluster`
- You should complete the update from Version 4.6 to Version 4.7 on all system roots of the cluster as quickly as possible.



# Installing the Version 4.7 Update Kit

## 1.3 Applying Updates to VAXcluster Systems

Given these restrictions, there are two methods of applying the update to an entire cluster:

Rolling update	Use this method for a VAXcluster site having multiple system roots (that is, any combination of private system roots and common system roots). This method enables old and new versions to temporarily exist together in the same VAXcluster system as you apply the update to each system root. (See Section 1.3.1.)
Concurrent update	Use this method for a VAXcluster site that has a single common system root. The entire cluster is unavailable as the update is applied to the common system root. When the update has been completed, reboot each node in the cluster to run the updated version. (See Section 1.3.2.)

When updating a common system root during either a rolling update or a concurrent update, you need to perform only one complete update from one of the nodes that shares the common system root. However, you may need to modify the console boot command files and manually invoke AUTOGEN to update the system configuration parameters for all nodes that share the common system root. Alternatively, you can use the MAKEROOT command procedure to create new alternate roots for these nodes. (See the *Guide to VAXclusters* for additional information.)

### 1.3.1 Updating a VAXcluster Environment: Rolling Update

A rolling update is the method used to apply an update to a VAXcluster system having multiple system roots (that is, any combination of private and common system roots). In a rolling update, you apply the update to each system root individually, thus causing new and old VAX/VMS versions to exist together temporarily in the same VAXcluster. As a result, a rolling update maintains partial system availability during an update. (See Chapter 5 of the *Guide to VAXclusters* for additional information.)

A rolling update is *not* applicable when all systems boot from a single common system root. If all systems boot from a single common system root, you must perform a concurrent update, as described in Section 1.3.2.

To perform a rolling update, complete the following steps, as appropriate, for each common system root or private system root in the cluster:

- 1 Check the value of the system parameter VOTES and make adjustments to maintain the proper quorum. This allows the cluster to continue operating throughout this process. (Chapter 5 of the *Guide to VAXclusters* describes this procedure in detail.)

- 2 Complete all the steps in Section 1.5 of these release notes.

If you are updating a *private system root*, skip the rest of this step and go to step 3.

If you are updating a *common system root*, you need to perform only one complete update from one of the nodes that shares that root. For all systems on a common system root, except the one from which you will apply the update, perform the following actions:

- a. Shut down the system, using your site's standard shutdown procedure. (See Section 4.1.1 of the *VAX/VMS System*

# Installing the Version 4.7 Update Kit

## 1.3 Applying Updates to VAXcluster Systems

*Manager's Reference Manual* for a description of the SYS\$SYSTEM:SHUTDOWN.COM command procedure.)

- b. After you shut down a system on a common system root, enter the following command on one of the remaining nodes:

```
$ SET CLUSTER/QUORUM
```

This allows one node to continue running from the common system root (assuming other nodes running from different roots supply enough votes to sustain cluster quorum).

If proper quorum is not maintained, the shutdown procedure will hang the cluster. In this event, enter the following commands to free the cluster:

```
$ CTRL/P
>>>H
>>>D/I 14 C
>>>C
IPC>Q
IPC> CTRL/Z
```

- 3 Update the single system according to Section 1.6 of these release notes.
- 4 Manually reboot the updated system, as described in Section 4 of the *VAX/VMS System Manager's Reference Manual*. The updated version should now be running on the single system.

When updating a common system root, reboot the other systems from the updated common root. This allows all systems on the common system root to run the updated version.

**Note:** At this point, the cluster is running with mixed versions of the VAX/VMS operating system. You should now test and verify the new version before updating the other system roots.

- 5 Repeat the tasks in this section, as appropriate for each system root, until all roots are running the updated version.
- 6 Proceed to step 2 of Section 1.7.

### 1.3.2 Updating a VAXcluster Environment: Concurrent Update

A concurrent update is the method used to apply an update to a VAXcluster environment that has a single common system root. A concurrent update is performed by shutting down the entire cluster and applying the updated version to the common system root. When the update is complete, you boot each node in the cluster to start running the updated VAX/VMS version. All systems in the cluster are unavailable while a concurrent update is being performed.

Perform the following steps to perform a concurrent update on your VAXcluster system:

- 1 Shut down the entire cluster, using your site's standard shutdown procedure. (See Section 4.1.1 of the *VAX/VMS System Manager's Reference Manual* for a description of the SYS\$SYSTEM:SHUTDOWN.COM command procedure.)

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## 1.3 Applying Updates to VAXcluster Systems

- 2 Perform a conversational boot on a single VAX system. Note the current values for the VOTES and QUORUM parameters; you will restore these values after the update has completed. Set the value for the VOTES and QUORUM parameters to 1. Enter the following commands to note the current values of the VOTES and QUORUM parameters and to set them to 1:

```
SYSBOOT> SHOW VOTES  
SYSBOOT> SHOW QUORUM  
SYSBOOT> SET VOTES 1  
SYSBOOT> SET QUORUM 1  
SYSBOOT> CONTINUE
```

See Section 4.2.3 of the *VAX/VMS System Manager's Reference Manual* for further discussion of the conversational boot procedure. Chapter 5 of the *Guide to VAXclusters* contains additional information about the VOTES and QUORUM parameters.

- 3 Install the Version 4.7 update as described in Sections 1.5 and 1.6. This applies the update to the root from which the system is booted. The update procedure shuts down the system when it completes.
- 4 Perform a conversational boot of this system, entering the necessary SYSBOOT commands to restore the original settings of the system parameters VOTES and QUORUM on this system as recorded in step 2.
- 5 Reboot the entire cluster according to your normal operating procedures. The entire cluster is now running the updated version of the VAX/VMS operating system.
- 6 Proceed to step 2 of Section 1.7.

---

## 1.4 Applying Updates to Local Area VAXcluster Systems

Before starting the update on a Local Area VAXcluster system, note the following:

- Read the release notes in Appendix C of the *Local Area VAXcluster Manual*, Version 4.6.
- All satellite nodes must be shut down for the duration of the update. If possible, perform an orderly shutdown by invoking the command procedure SYS\$SYSTEM:SHUTDOWN.COM. When the procedure asks if you want an automatic reboot, answer NO. If for some reason you cannot perform an orderly shutdown, halt the satellite node by pressing and releasing the HALT button on the satellite node's processor control panel or by pressing the BREAK key on the satellite node's console terminal.
- After the update completes, you must reinstall the Local Area VAXcluster license key (LAV010) and then reboot all the satellite nodes.
- If you are upgrading a MicroVMS operating system to the VAX/VMS operating system, to use a MicroVAX system as a boot node in a Local Area VAXcluster, you can delete SYS\$SYSTEM:UVSTARTUP.COM after the upgrade completes.

Sections 1.4.1 through 1.4.3 describe procedures for updating specific Local Area VAXcluster configurations.



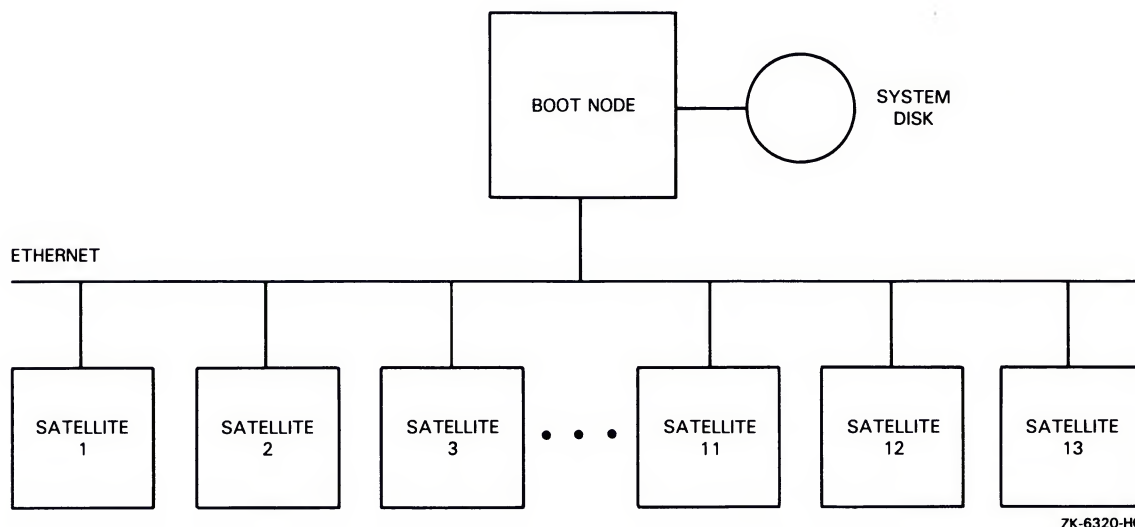
# Installing the Version 4.7 Update Kit

## 1.4 Applying Updates to Local Area VAXcluster Systems

### 1.4.1 Updating a Configuration with One Boot Node and One System Disk

Figure 1-1 shows a local area VAXcluster with one boot node and one system disk.

**Figure 1-1 Local Area VAXcluster with One Boot Node and One System Disk**



To update this Local Area VAXcluster configuration, proceed as follows:

- 1 Shut down all satellite nodes.
- 2 Log in to the system manager's account (SYSTEM) on the boot node.
- 3 Follow the steps in Section 1.5 to prepare your system for the update.
- 4 Apply the Version 4.7 update, as described in Section 1.6.
- 5 Reboot the boot node. If your boot node is a MicroVAX, see the software installation guide for your processor for instructions. If your boot node is not a MicroVAX, see Section 4 of the *VAX/VMS System Manager's Reference Manual* for instructions.
- 6 Insert the media containing the Local Area VAXcluster license key into the appropriate drive and enter the following command at the boot node to reinstall the license key:  

```
$ @SYS$UPDATE:VMSINSTAL LAV010 ddcu:
```

The parameter **ddcu** is the physical device name of the drive from which you reinstall the license key.
- 7 Reboot the boot node.
- 8 Restore the values of system parameters. If you modified the values of GBLSECTIONS and GBLPAGES in step 4 of Section 1.5, you might want to restore the old values. Edit SYS\$SYSTEM:MODPARAMS.DAT and delete the ADD\_GBLSECTIONS and ADD\_GBLPAGES lines to restore the old values of these parameters.

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## 1.4 Applying Updates to Local Area VAXcluster Systems

- 9 Run the AUTOGEN procedure on the boot node to adjust system parameters. Enter the following command, which runs AUTOGEN, shuts down the system, and reboots the system:

```
$ @SYS$UPDATE:AUTOGEN SAVPARAMS REBOOT
```

- 10 Reboot the satellite nodes, one at a time.

- 11 Run the AUTOGEN procedure on each satellite node to adjust system parameters. Enter the following command, which runs AUTOGEN, shuts down the system, and reboots the system:

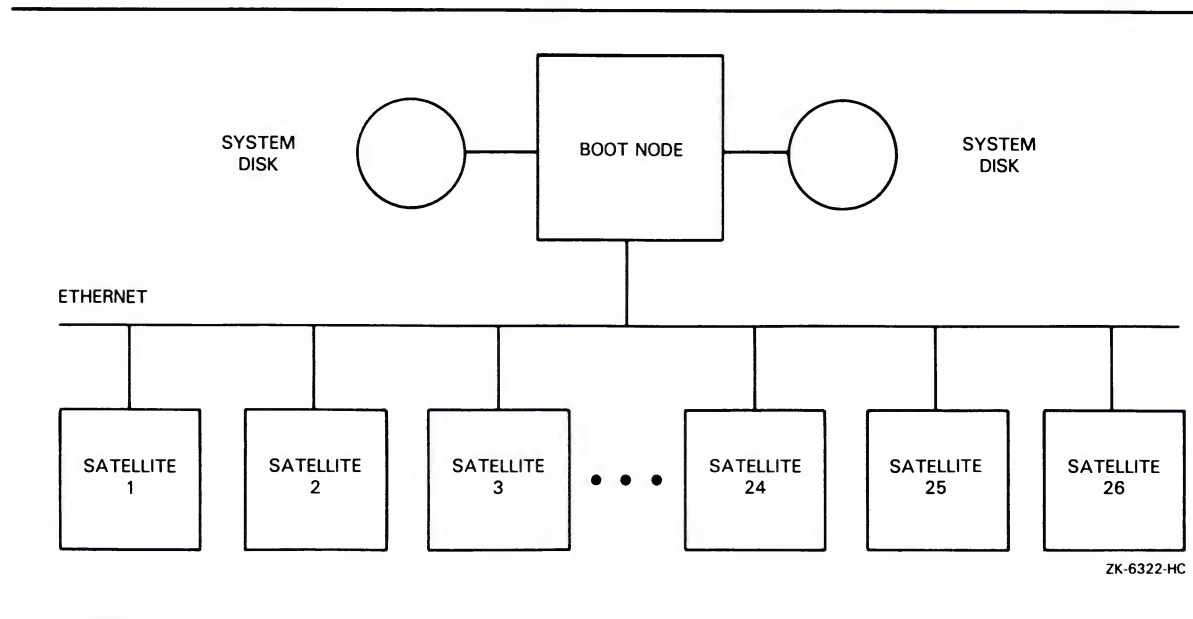
```
$ @SYS$UPDATE:AUTOGEN SAVPARAMS REBOOT
```

- 12 Perform step 2 in Section 1.7 to free up space on the system disk.

### 1.4.2 Updating a Configuration with One Boot Node and Two System Disks

Figure 1-2 shows a local area VAXcluster with one boot node and two system disks.

**Figure 1-2 Local Area VAXcluster with One Boot Node and Two System Disks**



To update this Local Area VAXcluster configuration, proceed as follows:

- 1 Shut down all satellite nodes.
- 2 Log in to the system manager's account (SYSTEM) on the boot node.
- 3 Follow the steps in Section 1.5 to prepare your system for the update.
- 4 Apply the Version 4.7 update, as described in Section 1.6.
- 5 Reboot the boot node.



# Installing the Version 4.7 Update Kit

## 1.4 Applying Updates to Local Area VAXcluster Systems

- 6 Insert the media containing the Local Area VAXcluster license key into the appropriate drive and enter the following command at the boot node to reinstall the license key:

```
$ @SYS$UPDATE:VMSINSTAL LAV010 ddcu:
```

The parameter **ddcu** is the physical device name of the drive from which you reinstall the license key.

- 7 Reboot the boot node.
- 8 Restore the values of system parameters. If you modified the values of GBLSECTIONS and GBLPAGES in step 4 of Section 1.5, you might want to restore the old values. Edit SYS\$SYSTEM:MODPARAMS.DAT and delete the ADD\_GBLSECTIONS and ADD\_GBLPAGES lines to restore the old values of these parameters.
- 9 Run the AUTOGEN procedure on the boot node to adjust system parameters. Enter the following command, which runs AUTOGEN, shuts down the system, and reboots the system:

```
$ @SYS$UPDATE:AUTOGEN SAVPARAMS REBOOT
```

- 10 The first system disk is now updated. To update the second disk, follow these steps:
  - a. Boot a satellite node that runs off the second system disk.
  - b. When the satellite node comes up, log in to the system manager's account (SYSTEM) on the satellite node.
  - c. Apply the Version 4.7 update, this time following instructions in Section 2.5.5 of the *VMS Local Area VAXcluster Manual*, "Installing Layered Products on a Boot Node with a Second System Disk." Note that the product name is VMS047.
  - d. Because the update deletes PEDRIVER.EXE, the reboot phase of the upgrade cannot complete on the second disk until PEDRIVER is restored. To restore the driver, log in to the boot node and copy the driver to the second disk. For example, if the second disk is SANDY\$DUA1, you would enter the following command:

```
$ COPY SYS$COMMON:[SYSEXE]PEDRIVER.EXE SANDY$DUA1:[V4COMMON.SYSEXE]
```

Once the driver has been copied, the update reboot phase will complete normally.

- 11 Reboot the remaining satellite nodes, one at a time.
- 12 Run the AUTOGEN procedure on each satellite node to adjust system parameters. Enter the following command, which runs AUTOGEN, shuts down the system, and reboots the system:

```
$ @SYS$UPDATE:AUTOGEN SAVPARAMS REBOOT
```

- 13 Perform step 2 in Section 1.7 to free up space on both system disks.

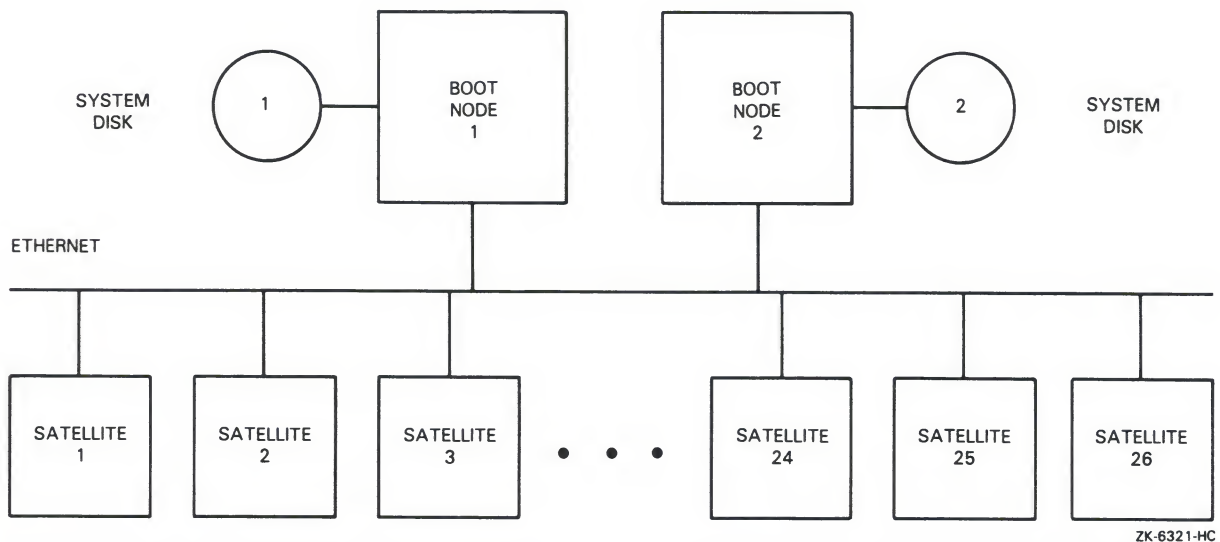
# Installing the Version 4.7 Update Kit

## 1.4 Applying Updates to Local Area VAXcluster Systems

### 1.4.3 Updating a Configuration with Two Boot Nodes and Two System Disks

Figure 1-3 shows a local area VAXcluster with two boot nodes and two system disks.

**Figure 1-3 Local Area VAXcluster with Two Boot Nodes and Two System Disks**



To update this Local Area VAXcluster configuration, proceed as follows:

- 1 Shut down all satellite nodes.
- 2 Shut down both boot nodes.
- 3 Configure one boot node to run standalone. Initiate a conversational bootstrap operation,<sup>1</sup> and enter the following commands at the SYSBOOT> prompt:  

```
SYSBOOT> SET QUORUM 1  
SYSBOOT> CONTINUE
```
- 4 After the system bootstraps, follow the steps in Section 1.5 to prepare your system for the update.
- 5 Log in to the system manager's account (SYSTEM) and apply the Version 4.7 update, as described in Section 1.6.
- 6 Reboot the first boot node.
- 7 Insert the media containing the Local Area VAXcluster license key into the appropriate drive and enter the following command to reinstall the license key:

```
$ @SYS$UPDATE:VMSINSTAL LAV010 ddcu:
```

<sup>1</sup> See the appropriate VAX/VMS system management documentation or the VAX/VMS installation and operations guides supplied with your processor for an explanation of the conversational bootstrap operation.

# Installing the Version 4.7 Update Kit

## 1.4 Applying Updates to Local Area VAXcluster Systems

The parameter **ddcu** is the physical device name of the drive from which you reinstall the license key.

- 8 Invoke the System Generation Utility (SYSGEN), as follows, to reset QUORUM to 2 for the next boot:

```
$ RUN SYS$SYSTEM:SYSGEN
SYSGEN> USE CURRENT
SYSGEN> SET QUORUM 2
SYSGEN> WRITE CURRENT
SYSGEN> EXIT
```

- 9 Restore the values of system parameters. If you modified the values of GBLSECTIONS and GBLPAGES in step 4 of Section 1.5, you may want to restore the old values. Edit SYS\$SYSTEM:MODPARAMS.DAT and delete the ADD\_GBLSECTIONS and ADD\_GBLPAGES lines to restore the old values of these parameters.

- 10 Run the AUTOGEN procedure on the boot node to adjust system parameters. Enter the following command, which runs AUTOGEN and shuts down the system, and reboots the system:

```
$ @SYS$UPDATE:AUTOGEN SAVPARAMS REBOOT
```

- 11 Repeat steps 3 through 10 on the other boot node.

- 12 Reboot both boot nodes.

- 13 Reboot the satellite nodes, one at a time.

- 14 Run the AUTOGEN procedure on each satellite node to adjust system parameters. Enter the following command, which runs AUTOGEN, shuts down the system, and reboots the system:

```
$ @SYS$UPDATE:AUTOGEN SAVPARAMS REBOOT
```

- 15 Perform step 2 in Section 1.7 to free up space on both system disks.

## 1.5

## Preparing to Update Your System

This section describes the activities you must perform before applying the Version 4.7 update to your system. You should read this entire section before proceeding with the update.

Perform the following steps to prepare your system for the update:

- 1 **Reserve space for the update files.**

The VAX/VMS Version 4.7 update procedure requires that a minimum number of free blocks be available on the system disk to allow the procedure to properly perform the update. To ensure that there are sufficient free blocks to meet the update procedure's *peak disk block utilization* (see Table 1-1), perform the following actions:

- a. Confirm the number of free blocks on the system disk by entering the following DCL command:

```
$ SHOW DEVICE SYS$SYSDEVICE:
```

# Installing the Version 4.7 Update Kit

## 1.5 Preparing to Update Your System

- b. Compare the number of *free blocks* shown on the display against the required peak disk block utilization shown in Table 1-1.

**Table 1-1 Approximate Disk Block Utilization for Version 4.7 Update Procedure**

Peak disk block utilization	6700
Net disk block utilization if files are purged during the update	2800

If you have fewer blocks available than the peak disk block utilization figure, you must reduce the number of used disk blocks to acquire enough free space for the Version 4.7 update. DIGITAL recommends that you use the following procedure to gain the needed disk space:

- a. Log in to an account that has sufficient privileges to create space on the system disk. DIGITAL recommends that you do not log in to the SYSTEM account. The SYSTEM account, which has all privileges (including BYPASS), is intended only for software installation, bootstrapping, and system problem diagnosis. You can avoid problems by creating another account and assigning the minimum privileges required to this account.
- b. Delete or purge all unwanted or redundant files from the system disk.
- c. If there still is not enough available space, copy the following files to another media and delete them from the system disk:
  - All files with file types of JNL, MAP, and LOG
  - All files in the [SYSHLP.EXAMPLES] and [SYSTEST] directories

If you cannot make a sufficient number of free blocks available on the system disk to meet peak utilization requirements, the update procedure operates in an alternate mode that reduces these requirements. However, if a system failure occurs while the procedure is operating in this alternate mode, you must restore the Version 4.6 system disk from a backup copy and restart the update procedure from the beginning.

### 2 Back up and restore the system disk.

By backing up the system disk, you preserve the original system disk in the event that a system failure at a critical point in the update results in unusable or deleted files. Restoring the system disk improves disk performance by storing all files contiguously and making all free disk space contiguous.

**CAUTION:** If you elect not to back up your system disk, a system failure at a critical point of the update procedure may cause the previous contents of the disk to become irretrievable.

To back up the system disk, proceed as follows:

- a. Use standalone BACKUP as described in the *Guide to VAX/VMS Software Installation* or in the *VAX/VMS System Manager's Reference Manual*.



# Installing the Version 4.7 Update Kit

## 1.5 Preparing to Update Your System

- b. If an additional drive with an unused disk of equal capacity is available, you can perform a disk-to-disk backup directly to it from the system disk and use the backup as the system disk during the update. To do this, you must swap the unit plugs of the two drives so that you can boot from the new backup disk using the default command procedure, DEFBOO.

If no drive with a disk of equal capacity is available, you must back up the system disk to whatever device is available:

- If the system disk is removable, remove and replace it with a spare disk. Then, transfer the files from the backup device to the spare disk by performing another backup operation. Use the spare disk as the system disk for the update and preserve the original system disk.
- If the system disk is not removable, you must use the original system disk for the update. However, you should restore the backup from the backup device to the system disk before performing the update to ensure that there is sufficient contiguous free space on the disk.

### 3 Back up the console RL02 disk.

If you are updating a VAX 8600 or VAX 8650 system, DIGITAL recommends that you also back up the console RL02 disk before applying the update. To do so, follow the steps in Section 2.8.1.1 of the *VAX/VMS System Manager's Reference Manual*, substituting "VAX 8600" for "VAX-11/780" and "RL02 disk" for "diskette" throughout the section.

### 4 Confirm the quotas and limits of the SYSTEM account.

Because you install the update from the SYSTEM account, you must make sure that the account has sufficient quotas and limits to complete the update successfully. To do so, perform the following actions:

- a. Log in to the SYSTEM account.
- b. Run the Authorize Utility (AUTHORIZE) by entering the following commands:

```
$ SET DEFAULT SYS$SYSTEM
$ RUN AUTHORIZE
UAF> SHOW SYSTEM
```

- c. Compare the SYSTEM account's limits and quotas to the following values:

Open file quota (Fillm)	60
Buffered I/O limit (BIOIm)	18
Direct I/O limit (DIOIm)	18
AST limit (ASTIm)	24
Enqueue quota (Enqlm)	30
Buffered byte quota count (BytIm)	20480

- d. Adjust the limits and quotas, as needed, to ensure that they are equal to or greater than the required values. You can change each value by entering a command in the following format:

```
UAF> MODIFY SYSTEM/limit=new_value
```

# Installing the Version 4.7 Update Kit

## 1.5 Preparing to Update Your System

For example:

```
UAF> MODIFY SYSTEM/DIOLM=18
```

- e. Return to DCL command level by entering the following command:

```
UAF> EXIT
```

- f. If you adjust any of the SYSTEM account's values, log out and log in again so that the new values take effect.

### 5 Reserve sufficient global pages and global sections.

The installation procedure requires at least 50 unused global sections and 3000 unused global pages. Make sure that sufficient unused global sections and global pages are available to the procedure by performing the following operations:

- a. Display the number of *used* global sections and *used* and *unused* global pages by entering the following commands:

```
$ INSTALL :== $INSTALL/COMMAND_MODE
$ INSTALL
INSTALL> LIST/GLOBAL/SUMMARY
INSTALL> EXIT
```

- b. Determine the current number of global sections by invoking the System Generation Utility (SYSGEN) and entering the following commands:

```
$ RUN SYS$SYSTEM:SYSGEN
SYSGEN> USE CURRENT
SYSGEN> SHOW GBLSECTIONS
SYSGEN> EXIT
```

- c. Determine the number of unused global sections by subtracting the number of used global sections (determined in step **a** from the INSTALL display) from the current number of global sections (determined in step **b** from the SYSGEN display).

- d. If the number of unused global sections is less than 50, add the following line to SYS\$SYSTEM:MODPARAMS.DAT:

```
ADD_GBLSECTIONS = 50
```

- e. If the number of unused global pages (determined in step **a** from the INSTALL display) is less than 3000, add the following line to SYS\$SYSTEM:MODPARAMS.DAT:

```
ADD_GBLPAGES = 3000
```

- f. Run the AUTOGEN procedure if you added a line to MODPARAMS.DAT to modify the GBLPAGES or GBLSECTIONS parameter. Enter the following command to run the AUTOGEN procedure:

```
$ @SYS$UPDATE:AUTOGEN SAVPARAMS REBOOT
```

The previous command shuts down the system and reboots it. After the system reboots, log in to the system manager's account, SYSTEM.

# Installing the Version 4.7 Update Kit

## 1.5 Preparing to Update Your System

### 6 Isolate the system from users.

Make sure that you are the only user logged in to the system. This is a twofold procedure:

- a. Notify current users that they must log out.
- b. Prevent new users from logging in by entering the following command:

```
$ SET LOGINS/INTERACTIVE=0
```

### 7 Shut down the network.

Perform this task only if your system is running DECnet-VAX software. If you are not sure whether your system includes DECnet-VAX software, enter the following command:

```
$ SHOW NETWORK
```

If the message "%SHOW-I-NONET, network unavailable" appears, skip to the next step. If your system does include DECnet-VAX software, shut it down by entering the following commands:

```
$ RUN SYS$SYSTEM:NCP
NCP> SET EXECUTOR STATE OFF
NCP> EXIT
```

### 8 Stop all batch and print queues.

To do so, perform the following tasks:

- a. Enter the following command to determine the state of all system queues:

```
$ SHOW QUEUE/DEVICE/BATCH/FULL/ALL
```

- b. Stop each active queue by entering the following command:

```
$ STOP/QUEUE/NEXT queue_name
```

The NEXT qualifier allows the current job to complete before the system stops the queue. If the current job will take a long time to complete, you might want to ask the person who submitted the job if it is safe to stop it prior to completion.

### 9 Connect the console device.

If you are installing Version 4.7 from console media, enter the following commands to connect the console device:

```
$ RUN SYS$SYSTEM:SYSGEN
SYSGEN> CONNECT CONSOLE
SYSGEN> EXIT
```

### 10 Review special considerations.

Under various circumstances and within certain configurations, you might be required to perform other actions before proceeding with the update. See Section 1.1.2 to determine if any special requirements apply to your system.

# Installing the Version 4.7 Update Kit

## 1.6 Installing the Version 4.7 Update

### 1.6 Installing the Version 4.7 Update

After completing the procedures described in Section 1.5, perform the steps in this section to install the Version 4.7 update kit.

#### 1 Invoke the VMSINSTAL command procedure.

Enter the following command:

```
$ @SYS$UPDATE:VMSINSTAL VMS047 device-name
```

The parameter **device-name** is the physical name of the device that will hold the update distribution media. Use one of the following formats for **device-name** depending on the system configuration:

- If the distribution volume (or volumes) is to be mounted on a non-HSC device, specify **device-name** using the format *ddcu*, as follows:

*dd* specifies the type of device.  
*c* refers to the controller number.  
*u* refers to the device unit number.

- If the distribution volume (or volumes) is to be mounted on an HSC device, specify **device-name** using the format *hsc-name\$ddcu*.

For example, if your distribution kit (load device) is a TU80 magnetic tape drive on controller A with unit number 0, you would enter the command:

```
$ @SYS$UPDATE:VMSINSTAL VMS047 MUAO:
```

If you are updating from a TA80 magnetic tape drive controlled by an HSC named VICE on controller A with unit number 0, you would enter the command:

```
$ @SYS$UPDATE:VMSINSTAL VMS047 VICE$MUAO:
```

If the VMSINSTAL command fails, determine whether either of the following conditions occurred:

- If VMSINSTAL displays the message "%VMSINSTAL-E-NOPRODS, None of the specified products were found," it is likely that you specified the letter "O" in the product name "VMS047" instead of a zero.
- If VMSINSTAL displays an "invalid device" error message, it issues prompts for a device name until you specify the correct name of a device existing on the system. Remember to terminate the device name with a colon (:).

When the command succeeds, VMSINSTAL displays the following message:

```
VAX/VMS Software Product Installation Procedure V4.6
```

```
It is (date) at (time).
```

```
Enter a question mark (?) at any time for help.
```

#### 2 Reply to VMSINSTAL prompts.

As the update procedure begins, VMSINSTAL presents its first prompt:

```
* Are you satisfied with the backup of your system disk [YES]?
```



# Installing the Version 4.7 Update Kit

## 1.6 Installing the Version 4.7 Update

If you are content with the current backup of the system disk, press the RETURN key and continue.

If you have not yet backed up your system disk or are otherwise dissatisfied with the current backup, perform the following operations:

- a. Type NO and press the RETURN key. VMSINSTAL returns to DCL level to permit you to perform the backup.
- b. Back up and restore your system disk using standalone BACKUP as described in the *Guide to VAX/VMS Software Installation* or the *VAX/VMS System Manager's Reference Manual*. Preserve your current system disk and use the backup copy to verify that the backup copy contains a working system.

If your system is a VAX 8600 or VAX 8650 system and you have not backed up the console RL02, DIGITAL recommends that you do so now. To do so, follow the steps in Section 2.8.1.1 of the *VAX/VMS System Manager's Reference Manual*, substituting "VAX 8600" for "VAX-11/780" and "RL02 disk" for "diskette" throughout the section.

- c. Restart the update procedure at step 1 when the backup is completed.

As it proceeds, VMSINSTAL may request additional information from you or display various messages. For instance, if you did not specify the name of a load device in the command that invoked VMSINSTAL in step 1, VMSINSTAL prompts for the name of the device holding the distribution volume:

\* Where will the distribution volume be mounted:

To respond, enter the physical name of the device that will hold the distribution media during the update operation.

VMSINSTAL displays informational messages describing the actions it is performing. During the entire process, look for error and warning messages that indicate tasks you must perform manually. Many informational messages will be displayed; these messages can usually be ignored. For example, if you are installing from an operator's terminal, you will receive a message after each mount operation if the system parameter MOUNTMSG is set and after each dismount operation if the system parameter DISMOUMSG is set. Each message will appear within 30 seconds of its associated operation. (Note that, by default, the MOUNTMSG and DISMOUMSG parameters are *not* set.)

### 3 Mount the first (or only) volume of the update kit.

VMSINSTAL next displays the following prompt:

Please mount the first volume of the set on ddcu:.

\* Are you ready?

To respond, perform the following actions:

- a. Insert the first (or only) distribution volume into the load device. If you are installing from diskettes, insert the first volume in the drive. If you are installing from magnetic tape, load the tape into the drive and press the ONLINE button to put the drive on line. If you are installing from TU58 cassettes, insert the first cassette into the drive. If you are installing from a tape cartridge, insert the cartridge into the tape drive.

# Installing the Version 4.7 Update Kit

## 1.6 Installing the Version 4.7 Update

- b. After you insert the first (or only) volume into the appropriate drive, type Y and press RETURN.

VMSINSTAL then displays the following information:

```
%MOUNT-I-MOUNTED, VMS047 mounted on _ddcu:
The following products will be processed:
```

```
VMS V4.7
```

```
Beginning installation of VMS V4.7 at (time)
```

```
%VMSINSTAL-I-RESTORE, Restoring product saveset A...
```

- c. If you are installing the update from a set of diskette or TU58 cassette volumes, VMSINSTAL automatically requests, as it completes its operations from one volume, that you remove the current volume and insert the subsequent one.

If you are installing from magnetic tape, there is only one tape for you to mount.

When VMSINSTAL completes the restoration of the save sets, it begins to apply the update to the system disk. During this time, be sure that the last (or only) volume of the update media remains mounted until the update is completed.

**Note:** If you are updating a tailored system or a small disk system (for example, a system using an RK07 cartridge disk), note that when the update procedure creates free disk blocks, it automatically cancels the effects of the VAX/VMS Tailoring facility. For this reason, the VMSINSTAL command procedure requires, at this time, that you mount the library disk so it can save the current tailoring environment across the update procedure.

### 4 Supply passwords, if prompted, and select an update option.

Shortly after it copies the first save set from the installation volume (or volumes), VMSINSTAL displays the following informational message:

```
This kit contains Version 4.7 of VAX/VMS. It must be installed
upon Version 4.6 of VAX/VMS.
```

**NOTE:** Among the new images shipped in this kit are PEDRIVER.MSKEXE and DSDRIVER.MSKEXE. If your system is running LAVc or volume shadowing software, you **MUST** reapply the LAVc or volume shadowing key(s) **AFTER** applying the Version 4.7 update. If you do not reapply the appropriate keys, your system will not be running the updated images.

Next, the update procedure checks that each DIGITAL-supplied account has an appropriate password and displays messages such as the following if the account has no password or if the password is the same as the user name of the account. Do *not* disable the SYSTEM account or the FIELD account. You can choose to disable other accounts.

The first phase of the upgrade will attempt to verify that all Digital supplied accounts are secured against obvious penetration attempts.

```
UPGRADE-W-PWD_INVALID, account password for SYSTEM is invalid
-UPGRADE-I-PWD_WEAK, password is too easy to guess
```

Because of the preceding error, you must take action to secure this account. You must either disable this account, change its password, or do both.

# Installing the Version 4.7 Update Kit

## 1.6 Installing the Version 4.7 Update

\* Do you want to disable the account [YES]? NO

\* Do you want to change the account password [YES]? YES

You must now select a new primary password for the SYSTEM account. The password you select must be at least 8 characters in length and may not be the same as the name of the account.

New password: Enter the new password; it does not appear on your terminal.

Verification: Enter the new password again; it does not appear on your terminal.

%UAF-I-MDFYMSG, user record(s) updated

%UPGRADE-I-PWD\_SET, primary password for account SYSTEM set.

UPGRADE-W-PWD\_INVALID, account password for FIELD is invalid

-UPGRADE-I-PWD\_WEAK, password is too easy to guess

Because of the preceding error, you must take action to secure this account.

You must either disable this account, change its password, or do both.

\* Do you want to disable the account [YES]? NO

\* Do you want to change the account password [YES]? YES

You must now select a new primary password for the FIELD account. The password you select must be at least 8 characters in length and may not be the same as the name of the account.

New password: Enter the new password; it does not appear on your terminal.

Verification: Enter the new password again; it does not appear on your terminal.

%UAF-I-MDFYMSG, user record(s) updated

%UPGRADE-I-PWD\_SET, primary password for account FIELD set.

UPGRADE-W-PWD\_INVALID, account password for SYSTEST is invalid

-UPGRADE-I-PWD\_WEAK, password is too easy to guess

Because of the preceding error, you must take action to secure this account.

You must either disable this account, change its password, or do both.

\* Do you want to disable the account [YES]? NO

\* Do you want to change the account password [YES]? YES

You must now select a new primary password for the SYSTEST account. The password you select must be at least 8 characters in length and may not be the same as the name of the account.

New password: Enter the new password; it does not appear on your terminal.

Verification: Enter the new password again; it does not appear on your terminal.

%UAF-I-MDFYMSG, user record(s) updated

%UPGRADE-I-PWD\_SET, primary password for account SYSTEST set.

UPGRADE-W-PWD\_INVALID, account password for SYSTEST\_CLIG is invalid

-UPGRADE-I-PWD\_WEAK, password is too easy to guess

Because of the preceding error, you must take action to secure this account.

You must either disable this account, change its password, or do both.

\* Do you want to disable the account [YES]? NO

\* Do you want to change the account password [YES]? YES

You must now select a new primary password for the SYSTEST\_CLIG account. The password you select must be at least 8 characters in length and may not be the same as the name of the account.

New password: Enter the new password; it does not appear on your terminal.

Verification: Enter the new password again; it does not appear on your terminal.



# Installing the Version 4.7 Update Kit

## 1.6 Installing the Version 4.7 Update

%UAF-I-MDFYMSG, user record(s) updated  
%UPGRADE-I-PWD\_SET, primary password for account SYSTEST\_CLIG set.  
%UPGRADE-I-NONEXIST, account USER does not exist  
%UPGRADE-I-NONEXIST, account USERP does not exist

Next, the system asks you to choose an update option.

- 1) Apply all fixes to the system
- 2) Create a file with the descriptions of all fixes
- 3) Both of the above

\* What would you like to do [3]:

- Under option 1, VMSINSTAL performs only the update.
- Under option 2, VMSINSTAL does not perform the update. It simply creates the update description file, SYS\$UPDATE:VMS047.TXT. (Appendix A lists the contents of this file.)
- Under option 3, VMSINSTAL performs the update and creates the update description file.

Type one of these option numbers and press RETURN.

If you choose option 2 or 3, VMSINSTAL displays the following message:

%VMS-I-FIXDESC, The fixes are described in SYS\$UPDATE:VMS047.TXT

### 5 Proceed with the update.

If you elect to proceed with the update by specifying option 1 or 3, VMSINSTAL displays the following question:

\* Do you want to purge files replaced by this installation [YES]?

If you want VMSINSTAL to automatically purge files replaced by the update, press RETURN. Answer N if you do not want these files purged. When VMSINSTAL receives your reply to this prompt, it restores the remainder of the update save sets and continues the copy operation from the specified drive.

As VMSINSTAL proceeds, it displays the name of each image that is patched or installed, plus various informational messages describing the characteristics of the patches and images. You should be aware of the following situations, which result in messages:

- The Patch Utility commonly generates the following informational messages:

%PATCH-I-NOLCL, image does not contain local symbols  
%PATCH-I-NOGBL, some or all global symbols not accessible  
%PATCH-I-PREVINIT, patch area has previously been initialized

These messages are a normal result of the construction of some update patches and should be ignored.

- When updating an image that has already been patched, VMSINSTAL displays the following informational message:

%PATCH-I-ECOSSET, eco level nn already set in 'xxx\$ROOT:filename'

This message indicates that a patch has previously been applied, most likely during the application of the Version 4.6 mandatory update. For this reason, you can ignore messages of this sort.

# Installing the Version 4.7 Update Kit

## 1.6 Installing the Version 4.7 Update

If all of the supplied patches in an image have already been applied, VMSINSTAL additionally displays the warning message:

```
%VMSINSTAL-W-NOFILE, New file 'Filename' does not exist.
```

In other words, if all the necessary patches have already been made to the file, there is no need for VMSINSTAL to create a new version of the file.

At its completion, VMSINSTAL displays the following message advising you to review the various fixes in which it encountered the "NOFILE" warning message. You can ignore this message.

```
%VMS-E-ERRORS, Of the nn fixes listed above, the following nn should be reviewed
```

VMSINSTAL also creates a journal file (with a JNL file type) for each image that is patched during the update process. (See Section 1.8 for additional information on the JNL files produced by the Version 4.7 update.)

When it completes the update, VMSINSTAL displays the following message:

```
Installation of VMS V4.7 completed at (time)
```

VMSINSTAL then performs an orderly shutdown of the system.

## 1.7 Tasks to Perform After the Version 4.7 Update

After VMSINSTAL has completed its installation of the Version 4.7 update kit, DIGITAL recommends that you perform the following tasks:

### 1 Reboot the system.

Manually reboot the system as described in Section 4 of the *VAX/VMS System Manager's Reference Manual*.

### 2 Log in to the system manager's account, SYSTEM.

### 3 Free up disk space.

VMSINSTAL permanently uses a certain number of disk blocks (as described in Table 1-1) called the *net disk block utilization*. This figure can vary, depending on whether or not you chose (in step 4 of Section 1.6) to purge the old copies of system files that are replaced during the update.

Use the following methods to free up disk space:

#### a. Confirm the free block count by entering the following command:

```
$ SHOW DEVICE SYS$SYSDEVICE:
```

#### b. Purge those files that the Version 4.7 update procedure cannot purge. In this manner you can recover approximately 2000 disk blocks. Use the PURGE command to remove old versions of the following files:

- SYS\$LIBRARY:ERFCTLSHR.EXE
- SYS\$LIBRARY:SECURESHR.EXE
- SYS\$SYSTEM:BACKUP.EXE

# Installing the Version 4.7 Update Kit

## 1.7 Tasks to Perform After the Version 4.7 Update

- SYS\$SYSTEM:CTDRIVER.EXE
- SYS\$SYSTEM:ERFPROC1.EXE
- SYS\$SYSTEM:HCSPAD.EXE
- SYS\$SYSTEM:MTAAACP.EXE
- SYS\$SYSTEM:PEDRIVER.MSKEXE
- SYS\$SYSTEM:RMS.EXE
- SYS\$SYSTEM:STABACKUP.EXE
- SYS\$SYSTEM:SYS.EXE

### 4 Use the Verify Utility to determine if the update procedure purged files incompletely.

When the update procedure purges files automatically, it incompletely purges some files used by system processes. System processes are not disconnected until the system is shut down.

The Verify Utility determines if there are any inconsistent files on a disk. Enter the following command to determine if your system disk contains any partially-purged files:

```
$ ANALYZE/DISK_STRUCTURE ddcu:
```

The parameter **ddcu** is the device name of your system disk.

The Verify Utility issues the following error message if files were purged incompletely:

```
%VERIFY-I-DELHEADER, file 'file-header' 'file-name' marked for delete
```

If the Verify Utility issues this error, enter the following command to repair your system disk:

```
$ ANALYZE/DISK_STRUCTURE ddcu:/REPAIR
```

The parameter **ddcu** is the device name of your system disk.

See the *VAX/VMS Verify Utility Reference Manual* for more information.

### 5 Restore the values of system parameters.

If you modified the values of GBLSECTIONS and GBLPAGES in step 4 of Section 1.5, you might want to restore the old values at this time. Edit SYS\$SYSTEM:MODPARAMS.DAT and delete the ADD\_GBLSECTIONS and ADD\_GBLPAGES lines to restore the old values of these parameters.

### 6 Adjust system parameters.

Run the AUTOGEN procedure to adjust system parameters. Enter the following command to run AUTOGEN, shut down the system, and reboot the system. After updating a common system root on a VAXcluster, run AUTOGEN on each node that bootstraps from the common system root.

```
$ @SYS$UPDATE:AUTOGEN SAVPARAMS REBOOT
```

For more information on the AUTOGEN procedure and the MODPARAMS.DAT file, see Section 11 of the *VAX/VMS System Manager's Reference Manual*.

### 7 Log in to the system manager's account, SYSTEM.



# Installing the Version 4.7 Update Kit

## 1.7 Tasks to Perform After the Version 4.7 Update

### 8 Copy VMB.EXE to the console media.

If you updated a Local Area VAXcluster, you do not need to copy VMB.EXE to the console media.

Otherwise, place a copy of the Version 4.7 VMB.EXE onto each system's console media. Note that, if you updated a VAXcluster, you must perform this step for each node in the VAXcluster.

#### VAX 8530, VAX 8550, VAX 8700, and VAX 8800 Processors

Perform the following steps to copy VMB.EXE from the system disk to the hard disk in the console microcomputer. Perform this entire procedure at your system's console terminal — the terminal connected to the console microcomputer.

- a. Press CTRL/P to change to console mode.
- b. Place a blank RX50 diskette in diskette drive 1, the top (or left-hand) diskette drive. The VAX/VMS operating system refers to diskette drive 1 as CSA1; P/OS-DCL refers to diskette drive 1 as DZ1.
- c. Enter the following command at the console-mode prompt (> > > ) to change to P/OS-DCL mode:

```
>>> EXIT
```

The P/OS-DCL command prompt (\$, €, or > ) appears on the console terminal.

- d. Enter the following P/OS-DCL command to initialize the diskette, substituting any 1- to 12-character name for **volume-id**:

```
$ INITIALIZE DZ1: volume-id
```

- e. Change to console mode by entering the following P/OS-DCL command:

```
$ RUN CONTROL
```

- f. Change to program mode by entering the following console-mode command:

```
>>> SET TERMINAL PROGRAM
```

- g. Invoke the System Generation Utility (SYSGEN) and connect the console by entering the following commands:

```
$ RUN SYS$SYSTEM:SYSGEN
SYSGEN> CONNECT CONSOLE
SYSGEN> EXIT
```

- h. Enter the following command to mount the diskette in diskette drive 1.

```
$ MOUNT /OVERRIDE=ID CSA1:
```

- i. Create a directory named CONSOLE on the diskette by entering the following command:

```
$ CREATE /DIRECTORY CSA1:[CONSOLE]
```

- j. Copy VMB.EXE to the diskette by entering the following command:

```
$ COPY SYS$SYSTEM:VMB.EXE CSA1:[CONSOLE]
```

# Installing the Version 4.7 Update Kit

## 1.7 Tasks to Perform After the Version 4.7 Update

- k. Enter the following command to dismount the diskette:

```
$ DISMOUNT CSA1:
```

- l. Change to P/OS-DCL mode by entering the following commands:

```
$ CTRL/P  
>>> EXIT
```

The P/OS-DCL prompt (\$, €, or >) appears on the console terminal.

- m. Open the drive door of diskette drive 1, pause for a moment, and close the door. The red light will flash and the drive will make a whirring sound.
- n. Enter the following P/OS-DCL command to mount the diskette, where **volume-id** is the same 1- to 12-character name you used when you initialized the diskette in step d:

```
$ MOUNT DZ1: volume-id
```

- o. Enter the following P/OS-DCL command to copy VMB.EXE from the diskette to the fixed disk in the console microcomputer:

```
$ COPY DZ1: [CONSOLE]VMB.EXE LBO: [CONSOLE]
```

The fixed drive in the console microcomputer is known by two names, DW2 and LB0. Most console files are stored using the name LB0. If you receive an error message telling you of a protection violation on the output device, enter the previous command again, substituting DW2 for LB0.

- p. Enter the following P/OS-DCL commands to set your default directory to LB0:[CONSOLE] and to ensure that the new VMB.EXE appears in that directory:

```
$ SET DEFAULT LBO: [CONSOLE]  
$ DIRECTORY VMB.EXE
```

- q. Change to console mode by entering the following P/OS-DCL command:

```
$ RUN CONTROL
```

- r. Change to program mode by entering the following console-mode command:

```
>>> SET TERMINAL PROGRAM
```

- s. Remove the diskette from the diskette drive. You have successfully copied VMB.EXE from the system disk to the hard disk in the console microcomputer.

### VAX-11/725, VAX-11/730, and VAX-11/750 Processors

Perform the following steps to copy the new VMB.EXE from the system disk to the console TU58 tape cassette:

- a. Invoke the System Generation Utility (SYSGEN) and connect the console by entering the following commands:

```
$ RUN SYS$SYSTEM:SYSGEN  
SYSGEN> CONNECT CONSOLE  
SYSGEN> EXIT
```

- b. Insert the console TU58 in CSA1.



# Installing the Version 4.7 Update Kit

## 1.7 Tasks to Perform After the Version 4.7 Update

- c. Back up and restore the console TU58, using the command procedure SYS\$UPDATE:CONSCOPY.COM described in Section 2.8.1.1 of the *VAX/VMS System Manager's Reference Manual*.
- d. Copy VMB.EXE to the console TU58 in CSA1 using the Exchange Utility, as follows:

```
$ EXCHANGE
EXCHANGE> COPY/LOG/REPLACE -
_EXCHANGE> SYS$SYSTEM:VMB.EXE/TRANSFER_MODE=BLOCK CSA1:
EXCHANGE> EXIT
```

- e. If your processor is a VAX-11/725 or a VAX-11/730, remove the console TU58 from CSA1 and place it in CSA2.

### VAX 8200, VAX 8250, VAX 8300, and VAX 8350 Processors

Perform the following steps to copy the new VMB.EXE from the system disk to the console diskette:

- a. Back up and restore the console diskette, using the command procedure SYS\$UPDATE:CONSCOPY.COM described in Section 2.8.1.1 of the *VAX/VMS System Manager's Reference Manual*.
- b. Invoke the console update command procedure SYS\$UPDATE:UPDATE\_CONSOLE.COM as follows:

```
$ @SYS$UPDATE:UPDATE_CONSOLE
```

The UPDATE\_CONSOLE command procedure copies the new VMB.EXE file onto your console diskette.

### VAX 8600 and VAX 8650 Processors

To copy the new VMB.EXE from the system disk to the console RL02 disk, invoke the console update command procedure SYS\$UPDATE:UPDATE\_CONSOLE.COM as follows:

```
$ @SYS$UPDATE:UPDATE_CONSOLE
```

The UPDATE\_CONSOLE command procedure copies the new VMB.EXE file onto your console RL02 disk.

### VAX-11/780, VAX-11/782, and VAX-11/785 Processors

To copy the new VMB.EXE from the system disk to the console diskette, invoke the console update command procedure SYS\$UPDATE:UPDATE\_CONSOLE.COM as follows:

```
$ @SYS$UPDATE:UPDATE_CONSOLE
```

The UPDATE\_CONSOLE.COM command procedure uses the Exchange Utility to save the contents of your existing console diskette onto disk. It then merges the new boot files with the saved copy of your console media. Finally, the procedure requests that you insert a scratch medium so it can copy the new boot files from disk to a new piece of console media. The UPDATE\_CONSOLE command procedure does not modify your original console media.

## 9 Back up the console media.

Back up your new console media, following instructions in Section 2.8.1.1 of the *VAX/VMS System Manager's Reference Manual*.

# Installing the Version 4.7 Update Kit

## 1.8 Printing Patches Applied by the Update Kit

### 1.8 Printing Patches Applied by the Update Kit

---

If you select option 2 or 3 as an update option (in step 4 of Section 1.6), VMSINSTAL produces the update description file, SYS\$UPDATE:VMS047.TXT. This file lists the patches, new images, and miscellaneous fixes that are part of the Version 4.7 update kit. If you print this file, you obtain the listing that appears in Appendix A of these release notes.

If you select option 1 or 3, VMSINSTAL produces a journal file (with the file type JNL) for each image that is patched during the update. Journal files contain a record of each patch made to these images but do not contain information about modules that are replaced. Note that no journal files are created for tailored systems.

If you want a listing of the patches produced by the update process, print the journal files, using the following steps:

- 1 Complete the update procedure that installs Version 4.7, including rebooting the system as described in the software installation guide for your processor.
- 2 Log in to any account that has SYSPRV privilege and enter the following command:

```
$ PRINT SYS$SYSTEM:*.JNL,SYS$LIBRARY:*.JNL
```

The journal files produced by the Version 4.7 update procedure occupy approximately 500 blocks. If you must conserve disk space, you can delete these files from the system disk after you print them.

## 2

---

## New and Changed Features

This chapter discusses new features added to the VAX/VMS operating system since the release of Version 4.6. It also describes features that have changed since the release of Version 4.6. Also, because these release notes supersede the Version 4.4 through 4.6 release notes, this chapter discusses features that have been added to the operating system since Version 4.3.

For ease of reference, the material in this section is arranged under the following categories:

- Section 2.1 - General User Information
- Section 2.2 - System Manager Information
- Section 2.3 - Application Programmer Information
- Section 2.4 - System Programmer Information

To find specific topics, consult the index in the back of this manual.

---

### 2.1 General User Information

This section describes new VAX/VMS operating system features of interest to the general user. It also discusses changes to the operating system.

---

#### 2.1.1 Updating a Version 4.6A System Results in Version 4.7A

When you install the Version 4.7 update on a Version 4.6A system, you obtain a Version 4.7A system rather than a Version 4.7 system. All system messages, including the message you receive when you bootstrap the system, indicate that you are using Version 4.7, however. Use the Patch Utility as follows to verify that you are using Version 4.7A. If you receive the message %PATCH-I-ECOSSET, your system is running Version 4.7A. If you receive the message %PATCH-I-ECONOTSET, your system is running Version 4.7.

```
$ PATCH/JOURNAL=NL: SYS$SYSTEM:SYS.EXE
PATCH> CHECK ECO 88
message appears here
PATCH> EXIT
```

If your system is running Version 4.7A, you can choose to edit the file SYS\$MANAGER:WELCOME.TXT, to read "Welcome to VAX/VMS Version 4.7A".

# New and Changed Features

## 2.1 General User Information

### 2.1.2 COBOL Run-Time Library Supports the ANSI 1985 COBOL Standard

The COBOL Run-Time Library and the COBOL compiler handle size error conditions differently when no ON SIZE ERROR clause is present. This affects how the COBOL Run-Time Library and the COBOL compiler handle the divide-by-zero instruction. The COBOL Run-Time Library complies with the ANSI 1985 COBOL standard, which states that all programs should continue after a divide-by-zero instruction. A program that generates code that causes a COBOL Run-Time Library (COBRTL) routine to execute a divide-by-zero instruction no longer receives a fatal error and aborts execution. Instead, when COBRTL performs a divide-by-zero instruction, it signals a nonfatal error indicating a divide-by-zero occurred and program execution continues.

Versions of the VAX COBOL compiler up to and including Version 3.4 generate a fatal error when they encounter a divide-by-zero instruction. A future release of VAX COBOL will conform to the ANSI 1985 COBOL standard in all cases where the arithmetic operation is accomplished by in-line code.

A program that generates code that causes a COBRTL routine to execute an undefined exponentiation is allowed to continue. Following is an example of an undefined exponentiation:

```
(-1)**0.5
```

Further COBRTL support for the ANSI 1985 COBOL standard will be implemented in a future release of VAX COBOL.

### 2.1.3 VAXTPU Sends Characters to the Terminal Without Translation

VAXTPU now sends the following additional characters to the terminal without translating them into the SUB character:

%XA0	%XA4	%XA6	%XAC
%XAD	%XAE	%XAF	%XB4
%XB8	%XBE	%XD0	%XDE
%XF0	%XFE	%XFF	

## 2.2 System Manager Information

This section describes new VAX/VMS operating system features of interest to the system manager. It also discusses changes to the operating system.

### 2.2.1 New CLUSTER.DAT File

Starting with Version 4.7, a new system file is maintained in the system root of each VAXcluster member. This file is used by the connection manager to maintain some configuration-related information when a VAXcluster member is rebooted. The file is named [SYSn.SYSEXE]CLUSTER.DAT.



## New and Changed Features

### 2.2 System Manager Information

---

#### 2.2.2 New VMB.EXE Image

VAX/VMS Version 4.7 has a new VMB.EXE image. This image contains a new computer interconnect (CI) boot driver in the PABTDRIVR module. This new boot driver corrects intermittent problems writing crash dumps over the CI and improves the reliability of bootstrapping over the CIBCA. After updating to Version 4.7, you must update your console media following instructions in Section 1.7.

If your system is part of a Local Area VAXcluster, you do not need to update the console media.

---

#### 2.2.3 ADD\_ Records Allowed in AUTOGEN

Since Version 4.5, AUTOGEN allows ADD\_ records to be included in SYS\$SYSTEM:MODPARAMS.DAT for all numeric SYSGEN parameters. Before Version 4.5, an ADD\_ record affected only those parameters that AUTOGEN calculated; the amount specified by the record was added to the value calculated by AUTOGEN. (See Section 11.4 of the *VAX/VMS System Manager's Reference Manual*.)

The value specified in an ADD\_ record for a parameter that AUTOGEN does not calculate is added to that parameter's default value. For example, if AUTOGEN encounters the record "ADD\_WSINC=50" in MODPARAMS.DAT, the value of the WSINC parameter is set to 200 (the default value of 150 plus the specified 50) after the next boot.

---

#### 2.2.4 DECnet-VAX Logical Link Enhancement

DECnet-VAX can cache packets received out of order on a given logical link. This allows network managers to enable the Equal Cost Path Split feature on DECnet Routing implementations that support it. Check the Software Product Description (SPD) to see if the Equal Cost Path Split feature is available for your DECnet product.

---

#### 2.2.5 New Machine Check Handler for VAX 8600/8650 Processors

Version 4.7 contains a new machine check handler for the VAX 8600 and VAX 8650 processors. This new handler enhances the capabilities of the previous machine check handler.

---

#### 2.2.6 Limited Support for Dual-Pathed HSC Tape Drives

Since Version 4.6, VAX/VMS has provided limited support for dual-pathed hierarchical storage controller (HSC) tape drives. This removes the previous restriction against any form of dual-pathed HSC tape drive, and increases the usefulness of HSC tape drives in situations where high availability is important.

A dual-pathed HSC tape drive is a drive that is connected to two HSC controllers, both of which have the same nonzero tape allocation class. (The tape allocation class is set using the HSC console command SET ALLOCATE TAPE.) VAX/VMS recognizes the dual-pathed nature of such a tape drive,

# New and Changed Features

## 2.2 System Manager Information

provided that it has access to both HSC controllers and that both port select buttons are depressed on the tape drive.

For dual-pathed tape drives, VAX/VMS automatically selects a functional HSC when processing a MOUNT or INITIALIZE command. However, if the selected HSC becomes inoperative while a tape is mounted, the tape must be dismounted and remounted in order to cause the alternate HSC to be used.

**Note:** This mount-time failover feature should not be confused with automatic failover, which can occur without dismounting the unit. VAX/VMS provides automatic failover only for disk devices. (See the *Guide to VAXclusters* for a discussion of automatic failover.)

Note that an HSC that becomes inoperative while I/O is pending is not declared inoperative until the timeout period specified by the SYSGEN parameter VMSD3 expires. VMSD3 should be set to a nonzero value which specifies the number of seconds to wait before attempting to fail over to the other port.

Note also that, due to a problem in the HSC software, a tape subsystem that has undergone a failover is declared inoperative by the failing HSC when the HSC reboots. To make the tape subsystem operative, you must toggle the port select button for the port connected to the failed HSC, or reset the tape subsystem. As a result, a tape subsystem cannot, without manual intervention, failover to a second HSC and then failover back to the original, in the event that the second HSC fails.

### 2.2.7 CIBCA — New Device Support

Since Version 4.6, VAX/VMS has supported the CIBCA. The CIBCA is a two-board computer interconnect (CI) interface for the BI bus and is functionally equivalent to the CIBCI. The CIBCA uses the same driver (PADRIVER) and device mnemonic (PA:) as the CIBCI, CI750, and CI780. The CIBCA also uses the same HSC booting and installation procedures as the CIBCI.

### 2.2.8 Backup Utility — RESTART Option

The following new feature was implemented in Version 4.5.

If, in the course of writing a save set to tape, the Backup Utility or standalone BACKUP encounter bad media or other excessive hardware or media-related errors, BACKUP generates the following informational message and prompt:

```
%BACKUP-I-SPECIFY, specify option (CONTINUE, RESTART, QUIT)
BACKUP>
```

(See the *VAX/VMS System Messages and Recovery Procedures Reference Manual* for a complete description of this message.)

If the output volume is the first volume in the backup operation, only QUIT and CONTINUE are available as valid recovery options. If the output volume is a subsequent volume in the BACKUP operation, then RESTART is also available.

RESTART causes BACKUP or standalone BACKUP to restart the backup operation at the beginning of the current volume. BACKUP unloads the current tape from the drive as soon as the RESTART option is taken and then prompts for a replacement volume. It is important that the operator *not* load the new tape until the utility has prompted for it.

# New and Changed Features

## 2.2 System Manager Information

### 2.2.9 Limiting Access to Optional Software Products on Clusters

The following new feature was implemented in Version 4.4.

It is now possible to limit access to an optional software product to one or more nodes in a cluster if the optional software product is placed in a common system directory. The method utilizes the access control list (ACL) features and a system rights identifier that is created during the startup phase of the boot process.

The identifier created at boot time is **SY\$\$NODE\_nodename**, where **nodename** is the name defined by the SYSGEN parameter SCSNODE. Because each node in the cluster has a unique SCSNODE name, each node has a unique identifier.

**Note:** An identifier is not created for a node in the cluster if any of the following are true:

- 1 The SYSGEN parameter SCSNODE is not defined.
- 2 The rights list file RIGHTSLIST.DAT is not created in your site-specific command procedure (SY\$\$MANAGER:SYSTARTUP.COM). See the *Authorize Utility Reference Manual* for information about how to create this file.
- 3 The command LOGOUT is executed from SYSTARTUP.COM. If this is the current behavior, the command must be changed to EXIT to return control to STARTUP.COM.

When a user logs in, the node-specific identifier is associated with the process. Invoking SHOW PROCESS/PRIVILEGE on NODE1 might yield the following message:

Process privileges:

```
SYSPRV may access objects via system protection
CMKRNL may change mode to kernel
OPER operator privilege
```

Process rights identifiers:

```
SY$$NODE_NODE1
```

The ACL commands used must limit access to the key images of the chosen optional software product. For example, if the product were a language, the image that compiles the program would be the file to which access should be restricted. The SET FILE/ACL=(IDENTIFIER) command is used to create the access control list for the file specified; entering a SHOW ACL command displays the access control list.

It should be mentioned that not all files on an optional software product need to be restricted.



# New and Changed Features

## 2.2 System Manager Information

The following example shows the necessary commands for limiting node access to an optional software product:

```
$! Allow access to the FORTRAN compiler on NODE1 in the cluster.
$!
$ SET FILE/ACL=(IDENTIFIER=*, ACCESS=NONE) SYS$SYSTEM:FORTRAN.EXE
$ SET FILE/ACL=(IDENTIFIER=SYS$NODE_NODE1, ACCESS=EXECUTE) SYS$SYSTEM:FORTRAN.EXE
$!
$! NOTE: The first SET FILE/ACL command specifies that no one has access
$!       to the FORTRAN image. The second command specifies that only processes
$!       with the identifier SYS$NODE_NODE1 can access the image. Thus,
$!       only those users who can log into NODE1 may use FORTRAN.
$! Limit access to the other key FORTRAN images.
$!
$ SET FILE/ACL=(IDENTIFIER=*, ACCESS=NONE) SYS$MESSAGE:FORTERR1.EXE
$ SET FILE/ACL=(IDENTIFIER=SYS$NODE_NODE1, ACCESS=EXECUTE) SYS$MESSAGE:FORTERR1.EXE
$ SET FILE/ACL=(IDENTIFIER=*, ACCESS=NONE) SYS$MESSAGE:FORTERR2.EXE
$ SET FILE/ACL=(IDENTIFIER=SYS$NODE_NODE1, ACCESS=EXECUTE) SYS$MESSAGE:FORTERR2.EXE
$!
$! Show the access control list for the FORTRAN compiler.
$!
$ SHOW ACL SYS$SYSTEM:FORTRAN.EXE
$!
Object type: file, Object name: DISK$:[SYSEXEC]FORTRAN.EXE;1,
on 01-01-1985 10:00:00.00

      (IDENTIFIER=SYS$NODE_NODE1,ACCESS=EXECUTE)
      (IDENTIFIER=*,ACCESS=NONE)
$!
$!
$! Allow access to the optional software product BASIC for two nodes in the cluster.
$1
$ SET FILE/ACL=(IDENTIFIER=*) SYS$SYSTEM:BASIC.EXE
$ SET FILE/ACL=(IDENTIFIER=SYS$NODE_NODE1, ACCESS=EXECUTE) SYS$SYSTEM:BASIC.EXE
$ SET FILE/ACL=(IDENTIFIER=*) SYS$MESSAGE:BASICMSG.EXE
$ SET FILE/ACL=(IDENTIFIER=SYS$NODE_NODE2, ACCESS=EXECUTE) SYS$MESSAGE:BASICMSG.EXE
```

Table 2-1 shows various optional software products and their associated key image file names.

**Table 2-1 Optional Software Products to Which Access Can Be Restricted**

Optional Software Product	Key Image File Name
VAX Ada	SYS\$SYSTEM:ADA.EXE SYS\$SYSTEM:ADAFROM_CDD.EXE SYS\$SYSTEM:ADASTAT.EXE
VAX APL	SYS\$SYSTEM:APL.EXE SYS\$LIBRARY:APLTAP.EXE SYS\$MESSAGE:APLMSG.EXE
VAX BASIC	SYS\$SYSTEM:BASIC.EXE SYS\$SYSTEM:BASICMSG.EXE
VAX BLISS-16	SYS\$SYSTEM:BLISS16.EXE
VAX BLISS-32	SYS\$SYSTEM:BLISS32.EXE



# New and Changed Features

## 2.2 System Manager Information

**Table 2–1 (Cont.) Optional Software Products to Which Access Can Be Restricted**

Optional Software Product	Key Image File Name
VAX C	SYSS\$SYSTEM:VAXC.EXE SYSS\$MESSAGE:VAXCCRERR.EXE SYSS\$MESSAGE:VAXCERR.EXE SYSS\$MESSAGE:VAXCVCGERR.EXE
VAX CDD	SYSS\$SYSTEM:CDDL.EXE SYSS\$SYSTEM:CDDV.EXE SYSS\$SYSTEM:DMU.EXE SYSS\$MESSAGE:CDDCXC.EXE SYSS\$MESSAGE:CDDVXC.EXE SYSS\$MESSAGE:CDDLXC.EXE SYSS\$MESSAGE:DMUXC.EXE
VAX COBOL	SYSS\$SYSTEM:COBOL.EXE SYSS\$SYSTEM:COB11T.EXE
VAX DIBOL	SYSS\$SYSTEM:DIBOL83.EXE SYSS\$MESSAGE:DIBOL83MSG.EXE SYSS\$MESSAGE:DBLRTLMSG.EXE SYSS\$SYSTEM:DBLSORT.EXE SYSS\$SYSTEM:DBLSORT2.EXE SYSS\$SYSTEM:DBLSTATUS.EXE SYSS\$SYSTEM:DBLMSGMGR.EXE SYSS\$SYSTEM:DBLISMUTL.EXE SYSS\$LIBRARY:DBLRTL.EXE
VAX DSM	SYSS\$SYSTEM:DSM.EXE SYSS\$MESSAGE:DSMJRN.EXE SYSS\$MESSAGE:DSMMJC.EXE
VAX FORTRAN	SYSS\$SYSTEM:FORTTRAN.EXE SYSS\$MESSAGE:FORTERR1.EXE SYSS\$MESSAGE:FORTERR2.EXE
VAX LISP	SYSS\$COMMON:[VAXLIS]LISP.EXE
VAX LSE	SYSS\$SYSTEM:LSEEDIT.EXE SYSS\$MESSAGE:LSEMSG.EXE SYSS\$LIBRARY:LSESHR.EXE
VAX PASCAL	SYSS\$SYSTEM:PASCAL.EXE SYSS\$MESSAGE:PASCALER1.EXE SYSS\$MESSAGE:PASCALER2.EXE
VAX PL/I	SYSS\$SYSTEM:PLIG.EXE SYSS\$MESSAGE:PLIGERR1.EXE SYSS\$MESSAGE:PLIGERR2.EXE SYSS\$MESSAGE:PLIGERR3.EXE
VAX RPG II	SYSS\$SYSTEM:RPG.EXE

# New and Changed Features

## 2.2 System Manager Information

---

### 2.2.10 SYSGEN Command CONNECT CONSOLE — New Qualifier

In Version 4.4, the /REMOTE qualifier was added to the SYSGEN command CONNECT CONSOLE. This qualifier enables a remote diagnostic port for a second console or terminal connected to a VAX 8600 or a VAX 8650 processor.

---

### 2.2.11 Mount Utility — New Option

The following new feature was implemented in Version 4.4.

The MOUNT command /CACHE=option qualifier has a new option, TAPE\_DATA. The /CACHE=TAPE\_DATA qualifier enables the write cache for a tape device if the tape controller supports a write cache. /NOCACHE is the default for mounting on tape devices. If the tape controller does not support a write cache, the option is ignored.

Note that the other options for the /CACHE=option qualifier pertain only to disks, while the TAPE\_DATA option is used only with magnetic tapes. The following command mounts the volume TAPE on device MUA0 and instructs MOUNT to enable the tape controller's write cache for MUA0:

```
$ MOUNT/CACHE=TAPE_DATA MUA0: TAPE
%MOUNT-I-MOUNTED, TAPE mounted on _NODE$MUA0:
```

---

## 2.3 Application Programmer Information

This section describes new VAX/VMS operating system features of interest to the application programmer. It also discusses changes to the operating system.

---

### 2.3.1 Linking Workstation Applications on Non-Workstation Machines

The UISSHR.EXE executable image allows you to link workstation applications on non-workstation machines. Version 4.7 of VAX/VMS updates the UISSHR.EXE image to include all UIS calls supported in Version 3.2 of the MicroVMS workstation software.

---

### 2.3.2 Debugger — Changes for VAXstations

Prior to Version 4.6, if the debugger was invoked on a VAXstation, it created a separate emulated terminal window for debugger input and output. Thus, terminal I/O performed by the program was logically and physically separated from debugger I/O. This behavior is especially useful for debugging screen-oriented applications.

To eliminate a potential problem, the method the Version 4.6 (and later versions) debugger uses to control the separate window has been changed. Previously, the debugger controlled the separate window with UIS\$xxx calls. The debugger now uses the new operating system command (OSC) sequences to communicate control functions to the terminal emulator. As a result, the debugger's behavior is slightly different for Version 4.6 and later versions.

## New and Changed Features

### 2.3 Application Programmer Information

The debugger still creates a separate window but only if both of the following conditions are met:

- You must be running VWS V3.0 (or higher).
- You must have the following system logical name defined:

```
$ DEFINE/SYSTEM/EXEC UIS$VT_ENABLE_OSC_STRINGS TRUE
```

#### 2.3.3 Linker Utility — Debugging Shareable Images

The following new feature was implemented in Version 4.4.

You can now link a shareable image by entering the following command:

```
$ LINK/SHAREABLE/DEBUG image-name,...
```

The qualifiers `/[NO]TRACEBACK` and `/DEBUG` are processed for a shareable image exactly as they are for an executable image. Previously, the `/DEBUG` qualifier was prohibited and the `/[NO]TRACEBACK` qualifier ignored when linking a shareable image.

#### 2.3.4 Terminal Driver Support — Changes

The following changes were made to VAX/VMS terminal support in Version 4.4.

##### 2.3.4.1 SET HOST/DTE Can Generate a Break

In order to log in on lines that expect a break rather than carriage return, you can now generate a break in SET HOST/DTE by simultaneously pressing the CTRL and Right Bracket (]) keys (CTRL/]).

##### 2.3.4.2 SET HOST/DTE/DIAL Command — Problem and Solution

The SET HOST/DTE/DIAL command does not work with the DMF-32 controller because the modem sends a response character to the host when it detects a carrier signal. The DMF-32 controller drops any input until it sees the carrier signal.

One solution is to modify the example autodialer provided in `SYS$EXAMPLES:DT_DF03.MAR` to perform a `IO$_SENSEMODE!IO$_M_RD_MODEM $QIO` to check for a carrier signal. If set, the autodialer should assume success and continue.

##### 2.3.4.3 Disabling Automatic Hangup

In Version 4.0, lines with the MODEM characteristic would hang up 30 seconds after sensing a CARRIER signal if a channel was not assigned to the device. This feature was implemented as a security feature to prevent unused lines from being tied up. It is now possible to disable this hangup on a systemwide basis by setting the bit-2 value to 4 in the `SYSGEN` parameter `TTY_DIALTYP`.

### 2.4 System Programmer Information

This section describes new VAX/VMS operating system features of interest to the system programmer. It also discusses changes to the operating system.

# New and Changed Features

## 2.4 System Programmer Information

### 2.4.1 CI Port Driver (PADRIVER)

The following sections contain information about the computer interconnect (CI) port driver, PADRIVER.

#### 2.4.1.1 Supported Microcode

If you have not done so already, you should upgrade to Version 7.0 of the CI-780 microcode as soon as possible. You can identify the current microcode version by following these steps:

- 1 Enter the following command:

```
$ SHOW CLUSTER/CONTINUOUS
```

- 2 Enter the ADD RP\_REVIS subcommand, as follows:

```
COMMAND> ADD RP_REVIS
```

The low-order word is the random access memory (RAM) version and the high-order word is the programmable read-only memory (PROM) version. For Version 7.0 microcode, this field contains 70007<sub>16</sub>.

The port driver displays the following message for sites containing old versions of the microcode:

```
%PAA0, - CI port ucode not at current rev level. PROM/RAM rev is 0005/0003
```

- 3 Enter the following command to return to DCL command level:

```
COMMAND> EXIT
```

#### 2.4.1.2 Variable CI Port Sanity Timer

Version 7.0 of the CI microcode contains a variable sanity timer. When this sanity timer expires, the following error message appears on the operator's console. The message shows that the Port Status Register (PSR) has a value of 40<sub>16</sub>.

```
%PAA0, - Port Error Bit(s) Set - CNF/PMC/PSR xxxxxxxx/xxxxxxx/00000040
```

The appearance of this error and other CI-related timeout errors does not necessarily mean that the CI hardware is bad. The system could be spending a long time at high hardware priority levels. This long latency could result from the setting of the SYSGEN parameters, the nature of the processing load on the cluster, or the presence of user-written privileged code.

You should first increase the value of the PASTIMOUT parameter until these errors occur infrequently, if at all. You may then wish to consult the *Guide to VAX/VMS Performance Management* to investigate the general performance characteristics of your system.



# New and Changed Features

## 2.4 System Programmer Information

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### 2.4.1.3 System Communication Services Virtual Circuit Timeouts

The VAX/VMS Version 4.4 and subsequent versions of the CI port driver and the Version 7.0 CI microcode implement a system communication services (SCS) virtual circuit timeout. This mechanism reduces cluster transition times by allowing rapid detection of a failed cluster node. In VAX/VMS Version 4.3, certain catastrophic hardware failures prevented orderly shutdown of the failing node. Because such failures did not shut down the CI port, other cluster members did not recognize a hardware failure for at least 100 seconds. This period is the expiration time for the sanity timer of the CI port.

The SCS virtual circuit timeout reduces the cluster transition time by requiring that CPUs, not ports, exchange periodic SCS control messages. The failure of a node to respond to an SCS control message within a specified time causes the port driver to break the virtual circuit and notify the connection manager of a communication problem.

With this timeout mechanism enabled, the CI port driver periodically checks to see that it is receiving systems-level messages from all remote VAX/VMS processors. The presence of these messages guarantees that the remote processor is not halted or hung in a loop at hardware IPL 7 or greater. If no routine messages appear from a remote node, the CI port driver attempts to generate traffic by sending a dummy keep-alive message to the remote node.

---

### 2.4.1.4 Virtual Circuit Timeout Errors

A timeout of the keep-alive message destroys the logical link between the two systems. When a timeout occurs, the driver closes the logical link, creates an error log entry, and prints the following message on the operator's console:

```
%PAAO, Virtual Circuit Timeout - REMOTE PORT nn
```

These messages do not represent a hardware failure but they do notify the system manager that the remote node is either halted or spending a long time at high hardware priority levels. Occurrence of the latter depends on the setting of the SYSGEN parameters, the nature of the processing load on the cluster, and on the presence of user-written privileged code. The system manager should first increase the PASTIMOUT timeout parameter (described below) until virtual circuit timeouts occur infrequently if at all. The system manager may then wish to consult the *Guide to VAX/VMS Performance Management* to investigate the general performance characteristics of the system.

# New and Changed Features

## 2.4 System Programmer Information

### 2.4.1.5 SYSGEN Parameters

The following SYSGEN parameters affect the SCS virtual circuit timeout mechanism. The system manager must ensure that these parameters are the same on all nodes in a cluster.

Parameter Name	Meaning
PASANITY	<p>This is a boolean parameter which, when set to zero, disables the timeout mechanism. This parameter is used for the debugging of system code and should not be changed. (Default is 1.)</p> <p>Customers writing privileged code using the XDELTA debugging tool must set PASANITY to zero on the entire cluster to avoid a CLUEXIT bugcheck.</p>
PASTIMOUT	<p>The activation time for the port timeout mechanism of the port driver. The port driver is able to detect a virtual circuit timeout within a minimum of PASTIMOUT seconds and a maximum of 3K PASTIMOUT seconds.</p> <p>The driver adjusts the effective value of PASTIMOUT if the PAPOLLINTERVAL parameter is too low. The effective value of PASTIMOUT is computed as follows (assuming PAPOLLINTERVAL is less than or equal to PASTIMOUT):</p> $\text{Effective PASTIMOUT} = \text{MAX}(\text{PASTIMOUT}, 2 \cdot \text{PAPOLLINTERVAL})$ <p>Do not set PAPOLLINTERVAL greater than PASTIMOUT. Such a setting has no useful purpose. (Default is 5 seconds.)</p>
PAPOLLINTERVAL	<p>This parameter specifies the duration for which the CI port driver requests the port to poll for other nodes in a cluster. The failure of the port to complete a poll during this interval causes the driver to declare a CI port timeout and reset the port.</p> <p>The port driver must guarantee detection of a failed local port before detection of failed links to remote nodes. Otherwise, a port failure could result in multiple "virtual circuit timeout" messages for every remote node. The port driver uses the formula included in the description of the PASTIMOUT parameter to ensure that a port timeout precedes virtual circuit timeouts. (Default is 5 seconds.)</p>

# New and Changed Features

## 2.4 System Programmer Information

Parameter Name	Meaning
RECNXINTERVAL	<p>This parameter specifies the amount of time that the connection manager waits between the loss of a connection to a remote node and the initiation of a cluster transition to remove the failed node from the cluster. The minimum value of RECNXINTERVAL must guarantee that all of the connections seen from the viewpoint of the remote node are broken. Otherwise, the remote node may continue to access cluster disks after being removed from the cluster. The correct setting of RECNXINTERVAL is at least three times the effective value of PASTIMOUT, as determined by the following formula (assuming PAPOLLINTERVAL is less than or equal to PASTIMOUT):</p> $\text{RECNXINTERVAL} > 3 \cdot (\text{MAX}(\text{PASTIMOUT}, 2 \cdot \text{PAPOLLINTERVAL}))$ <p>Since the default intervals for PASTIMOUT and PAPOLLINTERVAL are 5 seconds, the minimum allowable RECNXINTERVAL is 30 seconds. The default is 60 seconds.</p>

For clusters requiring rapid failover, the system manager can decrease both PASTIMOUT and PAPOLLINTERVAL to 1 second. On heavily loaded clusters, however, this rapid failover may lead to an increase of CLUEXIT bugchecks on individual nodes. Clusters with Version 5.0 CI microcode should retain the default settings, since the port driver does not enable the virtual circuit sanity timer.

### System Communication Timeout SYSGEN Parameters

Parameter	Default	Minimum
PASANITY	1 sec	1 sec
PAPOLLINTERVAL	5 sec	1 sec
PASTIMOUT	5 sec	1 sec
RECNXINTERVAL	60 sec	6 sec

Result	Default	Minimum
Port failure detection	5-10 sec	1-2 sec
Virtual Circuit failure detection	10-30 sec	2-6 sec





# 3

## Corrected Problems, Restrictions, and Notes

---

This chapter discusses problems that have been corrected in Version 4.7 of the VAX/VMS operating system. It also describes any restrictions that may apply to the use of the Version 4.7 operating system and contains other information concerning the release.

For ease of reference, the material in this section is arranged under the following categories:

- Section 3.1 - General User Information
- Section 3.2 - System Manager Information
- Section 3.3 - Application Programmer Information
- Section 3.4 - System Programmer Information

To find specific topics, consult the index in the back of this manual.

---

### 3.1 General User Information

This section describes problems resolved in VAX/VMS Version 4.7, lists known restrictions, and contains other information of interest to the general user.

#### 3.1.1 Command Procedures — Change for Next Major Release

In the next major release of the VAX/VMS operating system, all commands, full-line comments, and labels in command procedures must be preceded by a dollar sign (\$). Although users have always been instructed to place a dollar sign before commands and labels, command procedures that omit dollar signs before labels have not necessarily stopped executing. The next major release of the VAX/VMS operating system, however, will treat labels with missing dollar signs as data lines. Any reference to a label with a missing dollar sign will not execute as expected.

#### 3.1.2 SET HOST/HSC/LOG='filename' Command — Problem Fixed

VAX/VMS Version 4.7 corrects a problem with the DCL command SET HOST/HSC/LOG='filename'. This problem, which was introduced in Version 4.6, caused the SET HOST/HSC/LOG='file-name' command to ignore a user-supplied file name and to always use the default name HSCPAD.LOG to name the log file. The command now works correctly and names the log file HSCPAD.LOG if no file name is specified or 'file-name' if a file name is specified.

# Corrected Problems, Restrictions, and Notes

## 3.1 General User Information

### 3.1.3 The SUBMIT Command Ignores the /CLI Qualifier — Problem

The /CLI qualifier to the SUBMIT command fails to invoke the specified command language interpreter when the batch job is run. Instead, the command language interpreter specified in the User Authorization File (UAF) for the owner of the job is used (as if the /CLI qualifier were not present).

### 3.1.4 Unsynchronized Cluster Time Affects SUBMIT/AFTER Command

In a VAXcluster, a batch job submitted to execute at a specified time may begin execution a little before or after the requested time. This occurs when the clocks of the member systems in the VAXcluster are not synchronized. For example, a job submitted using the DCL command SUBMIT/AFTER=TOMORROW may execute at 23:58 relative to the host system's clock.

This problem can occur in a cluster even if a job is run on the same machine from which it was submitted, because the redundancy built into the batch/print system allows more than one job controller in the cluster to receive a timer AST for the job and, thus, to schedule it for execution. Moreover, this behavior is exacerbated if the batch job immediately resubmits itself to run the next day using the same SUBMIT command. This can result in having multiple instances of the job executing simultaneously because TOMORROW (after midnight) may be only a minute or two in the future.

A workaround to this problem is to place the SUBMIT command in a command procedure that begins with a WAIT command, where the *delta-time* specified in the WAIT command is greater than the maximum difference in time between any two systems in the cluster. Use the SHOW TIME command on each system to determine this difference in time.

### 3.1.5 Extended File Names or File Types — Caution

Although file names and file types of up to 39 characters are permitted starting with VAX/VMS Version 4.0, for some files you may need to use the VAX/VMS Version 3.x maximum lengths (9 characters for the file name and 3 characters for the file type), or other maximum lengths as appropriate.

For example, you must use restraint in naming files that will be accessed by:

- Operating systems that cannot support longer file names and file types, such as VAX/VMS Version 3.x systems and systems for PDP-11 processors
- Applications software that does not accept longer file names and file types

Be careful when you are naming files that will be copied or accessed by remote systems. The file-naming abilities of VAX/VMS after Version 4.0 exceed those of most other computer systems, including VAX systems running VAX/VMS Version 3.x. For example, a system running VAX/VMS Version 3.x returns a syntax error when a file specification contains a file name (including a directory name) longer than 9 characters, a file type longer than 3 characters, a dollar sign (\$), or an underscore (\_). Valid file specifications of VAX/VMS after Version 4.0 that are invalid on a VAX/VMS Version 3.x system include the following:

# Corrected Problems, Restrictions, and Notes

## 3.1 General User Information

```
NODE::DBA2:[YOUR_DIR]FILE.DAT
NODE::DBA2:[DIR]FILETOOLONG.DAT
NODE::DBA2:[DIR]FILE_TEST.DAT
NODE::DBA2:[DIR]FILE.DATA
```

A user of a Version 4.0, or later, system would have to rename these files before the remote system could access them. Alternatively, the user could copy these files to the remote system by using valid VAX/VMS Version 3.0 output file specifications.

File name restrictions are generally determined by the file name capabilities of the remote systems that require access to the file. Such restrictions should be considered as part of the overall application design when network access is required.

Applications that parse file specifications using the pre-Version 4.0 file specification conventions should be modified to use the services or routines that can parse or scan file specifications using the new extended file specifications conventions. These services and routines include the RMS Parse service and the Scan String for File Specification system service (see the *VAX Record Management Services Reference Manual* and the *VAX/VMS System Services Reference Manual*) and the LIB\$FIND\_FILE and LIB\$FILE\_SCAN routines (see the *VAX/VMS Run-Time Library Routines Reference Manual*).



### 3.1.6 Shutdown Notification on Clusters — Note

When the REMOVE\_NODE option is specified during execution of an orderly shutdown procedure (SYS\$SYSTEM:SHUTDOWN.COM) on one VAXcluster member system, users on all member systems are notified. Clusterwide notification is required, because users logged in to any member system may be affected by the shutdown of another system in various ways:

- Users may have batch jobs running on other systems.
- If terminal servers are in operation, users may have alternate terminal sessions in progress (for example, an editing session) on the system being shut down.

Since shutdown messages include the name of the member system being shut down, users need only check the messages carefully to avoid logging out of a system unnecessarily.

Note that, for those reasons, clusterwide notification is not affected by the shutdown procedure's REPLY/NODE= option. If, for some reason, you wish to limit shutdown notification to specific member systems, define the logical name SHUTDOWN\$INFORM\_NODES before executing the shutdown procedure. For example:

```
$ DEFINE SHUTDOWN$INFORM_NODES MOE,LARRY
$ @SYS$SYSTEM:SHUTDOWN
```

In this example, only users on systems MOE and LARRY will be notified.

### 3.1.7 TK50 Tape Drive — Problem Fixed

Before Version 4.7, the TK50 tape drive would hang the user process if the tape cartridge from which it was trying to read data had fewer than four file-header records. This problem has been fixed. The TK50 tape drive can read data from a TK50 tape cartridge that contains only two file-header records.



# Corrected Problems, Restrictions, and Notes

## 3.1 General User Information

### 3.1.8 Physical QIOs to a DSA Tape Device Might Result in a Fatal Error

When physical I/O functions are issued to DSA tape devices, the tape class driver (TUDRIVER) might return the following error message:

```
%SYSTEM-F-VOLINV, volume not software enabled
```

This is usually caused by physical I/O functions being issued while other I/O operations are outstanding to the tape controller. (DIGITAL-supplied utilities should not encounter this problem.)

To avoid this problem, you can substitute the IO\$\_READLBLK and IO\$\_WRITELBLK function codes for the IO\$\_READPBLK and IO\$\_WRITEPBLK function codes. The IO\$\_READLBLK and IO\$\_WRITELBLK function codes are functionally equivalent to the IO\$\_READPBLK and IO\$\_WRITEPBLK for DSA tape devices.

This problem exists in VAX/VMS Versions 4.6 and 4.7. In VAX/VMS Version 4.5 and earlier versions, physical I/O operations completed correctly when other I/O operations were outstanding to the tape controller. This problem will be fixed in a future release of the VAX/VMS operating system.

### 3.1.9 Tape Class Driver (TUDRIVER.EXE) — Problem Fixed

VAX/VMS Version 4.7 contains a patch to the tape class driver (TUDRIVER.EXE) to fix the following problem.

Issuing an IO\$\_REWIND QIO with the IO\$\_M\_NOWAIT modifier set to a TU81 or TU81-Plus, followed immediately by an IO\$\_REWINDOFF or IO\$\_UNLOAD QIO, may cause the process to hang. This sequence of QIOs occurs when a DISMOUNT command is issued immediately after a file on tape is closed. The TU81 and TU81-Plus magnetic tape drives cannot process this command sequence properly.

When this sequence of events occurs, the tape class driver reinitializes the tape controller, but the tape class driver does not recover from the reinitialization properly. This improper reinitialization recovery leaves the IO\$\_REWINDOFF or IO\$\_UNLOAD QIO in the I/O pending queue. The process hangs waiting for this I/O to complete. The Version 4.7 patch to the tape class driver (TUDRIVER.EXE) retries the I/O rather than leaving it in the pending queue.

A future version of the TU81 and TU81-Plus microcode will handle this command sequence properly, eliminating the necessity for the tape class driver to reinitialize the controller.

### 3.1.10 ANALYZE/ERROR\_LOG Command — Problem

The ANALYZE/ERROR\_LOG command of the Error Log Utility now recognizes TA79 tape drive error log entries. When the command processes the extended drive status information, it identifies the TA79 device incorrectly as a TA78 device.

DIGITAL expects to fix this problem in a future release of VAX/VMS.



# Corrected Problems, Restrictions, and Notes

## 3.1 General User Information

### 3.1.11 Invalid Access Control List Error Message Fixed

Before Version 4.7, a file protection operation sometimes returned the incorrect error status `SS$_IVACL`. The protection operation returned this status if the file affected by the protection operation had multiple file headers with large access control lists within each file header. This problem was usually seen on disks with very fragmented files. Version 4.7 fixes this problem.

### 3.1.12 SET FILE/ACL Command and Search Lists — Problem Fixed

Before Version 4.7, if a search list specifying multiple devices was used as a part of the target file specification in the SET FILE/ACL command, the SET FILE/ACL command always attempted to modify the file on the first device in the search list. Version 4.7 fixes this search list translation problem. The SET FILE/ACL command, when used in conjunction with search lists, now modifies the access control list on the file located on the correct device.

---

## 3.2 System Manager Information

This section describes problems resolved in VAX/VMS Version 4.7, lists known restrictions, and contains other information of interest to the system manager.

### 3.2.1 MicroVMS Workstation Software (VWS) Compatibility

VAX/VMS Version 4.7 is compatible with all versions of the MicroVMS Workstation Software (VWS) through VWS Version 3.2.

### 3.2.2 VAX RMS Journaling Version 1.0 Operates Correctly with VAX/VMS Version 4.7

The *VAX RMS Journaling Installation Guide and Release Notes* states that VAX/VMS Version 4.6 or MicroVMS Version 4.6 must be running on your system in order to install VAX RMS Journaling, Version 1.0. You can also install VAX RMS Journaling on a system that is running VAX/VMS Version 4.7 or MicroVMS Version 4.7.

If you installed VAX RMS Journaling on a system running VAX/VMS Version 4.6 or MicroVMS Version 4.6, there is no need to reinstall VAX RMS Journaling after updating to VAX/VMS Version 4.6 or MicroVMS Version 4.6.

# Corrected Problems, Restrictions, and Notes

## 3.2 System Manager Information

### 3.2.3 Defining a Logical Name for a Disk when Using VAX RMS Journaling

Information about defining logical names was documented incompletely in Chapters 4 and 6 of the *VAX RMS Journaling Manual*, Version 1.0. (The /TRANSLATION=TERMINAL qualifier to the DEFINE command was omitted.) These chapters should contain the following information.

RMS attempts to translate the executive-mode logical name DISK\$volume\_label when creating or accessing an after-image, before-image, or recovery unit journal file. This is the default logical name created by the Mount Utility *only if* no other logical name was specified when the disk is mounted. Thus, if the disk was mounted with the following command, the logical name DISK\$FINANCE\_DISK is created:

```
$ MOUNT/SYSTEM DBAO: FINANCE_DISK
```

Suppose, however, that the disk was mounted using the following command, which defines the logical name DISK1:

```
$ MOUNT/SYSTEM DBAO: FINANCE_DISK DISK1
```

In this case, you must explicitly define the logical name DISK\$FINANCE\_DISK as follows:

```
$ DEFINE/SYSTEM/EXECUTIVE_MODE/TRANSLATION=TERMINAL -  
_$ DISK$FINANCE_DISK DBAO:
```

If you fail to explicitly define the logical name for the disk, VAX RMS Journaling cannot open journal files on the disk. The following error message results if VAX RMS Journaling cannot open a recovery unit journal file:

```
%RMS-F-ACC_RUJ, recovery unit journal can not be accessed
```

The following error messages result if VAX RMS Journaling cannot open after-image journal files:

```
%RMS-F-ACC_AIJ, after image journal cannot be accessed  
-SYSTEM-F-NOLOGNAM, no logical name match
```

The following error messages result if VAX RMS Journaling cannot open before-image journal files:

```
%RMS-F-ACC_BIJ, before image journal cannot be accessed  
-SYSTEM-F-NOLOGNAM, no logical name match
```

### 3.2.4 Modem Signal Requirements Will be Enforced — Planned Change

In a future major release of the VAX/VMS operating system, the modem signal requirements described in Section 8.2.3 of the *VAX/VMS I/O User's Reference Manual: Part I* will be enforced. System managers should be sure that their host system modems are wired properly and meet the requirements.

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### 3.2.5 DUP11 Synchronous Communication Line Adapter Support

In the next major release of the VAX/VMS operating system, support for the DUP11 synchronous communication line adapter will be withdrawn. XWDRIVER, the device driver for the DUP11, will be removed from the kit at that time. VAX PSI, VAX 3271, and VAX 2780/3780 customers will not be affected by the withdrawal of VAX/VMS support, as drivers which support both the IBM bisynchronous and the HDLC protocols are provided with those products.

### 3.2.6 User Environment Test Program (UETP) — Problems and Solutions

The User Environment Test Program (UETP) is a VAX/VMS software package designed to test whether the operating system is installed correctly. The following sections describe problems with UETP.

#### 3.2.6.1 Cluster Test Phase — Problem and Solution

The Version 4.7 update procedure requires you to either supply a password for the SYSTEST\_CLIG account or to disable this account. The Cluster Test Phase of UETP uses the SYSTEST\_CLIG account to create test processes on each node within the cluster. This phase of UETP assumes that the SYSTEST\_CLIG account has no password and that the account is enabled. Therefore, if you run UETP in a cluster environment after supplying a password for SYSTEST\_CLIG or disabling this account, you receive the following error message for each node being tested:

```
%SYSTEM-F-INVLOGIN, login information invalid at remote node
```

If you disabled the account during the update procedure, use the Authorize Utility to reenable the account, as follows:

```
$ SET DEFAULT SYS$SYSTEM
$ RUN AUTHORIZE
UAF> MODIFY /FLAGS=NODISUSER SYSTEST_CLIG
UAF> EXIT
$
```

If you changed the password to the SYSTEST\_CLIG account during the update procedure, use the Authorize Utility to change the password for the SYSTEST\_CLIG account to the null password, as follows:

```
$ SET DEFAULT SYS$SYSTEM
$ RUN AUTHORIZE
UAF> MODIFY /NOPASSWORD SYSTEST_CLIG
UAF> EXIT
$
```

**Note:** DIGITAL recommends that you disable the SYSTEST\_CLIG account after testing has been completed.



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### 3.2.6.2 Cluster Test Phase Failures

The UETP cluster test phase might fail while communicating with cooperating test nodes through DECnet when the test nodes exist in a large Local Area VAXcluster configuration. The probability of these failures increases if activity is high on the test nodes.

Failures occur most often during the startup of the test and at the end of the test (during attempts to retrieve error log information).

A future release of the operating system will improve the performance of the test on large Local Area VAXcluster configurations. Until this improvement is made, DIGITAL recommends that you restrict cluster activity to a minimum during testing.

### 3.2.6.3 FILLM Quota Problems

UETP may fail if the FILLM quota of the SYSTEST account is too low. The following sections describe values for FILLM that are required to run UETP. If both situations described in the following sections apply to your configuration, calculate FILLM for both situations and increase FILLM to the larger of the two values.

#### 3.2.6.3.1 Testing Large Local Area VAXclusters — Problem

If your Local Area VAXcluster configuration has more than 18 nodes, the cluster test phase of UETP outputs an exceeded quota error message during the test set up. This problem is a result of an inadequate value for the FILLM quota of the SYSTEST account. (By default, FILLM is 20.)

If you are testing Local Area VAXcluster configurations with more than 18 nodes, DIGITAL recommends increasing FILLM to a value that is 2 greater than the total number of nodes in your cluster. For example, if your cluster has 20 nodes, increase FILLM to 22. Section 3.2.6.3.2 describes how to increase the FILLM quota.

This problem will be corrected in the next major release of the operating system.

#### 3.2.6.3.2 Error in UETDISK00 Test Image — Problem and Solution

When the UETDISK00 test image tests 10 or more disks connected to a single controller, the following fatal error may result:

```
*****
* DISK_NODE$DUA      *
* Error count =  n   *
*****
-UETP-E-TEXT, RMS file error in file NODE$DUAxx:NODE$DUAxx.TST
-RMS-E-CRE, ACP file create failed
-SYSTEM-F-EXQUOTA, exceeded quota
```

If you receive this error message, you must increase the open file limit (FILLM) quota for the SYSTEST account. First, determine which disk controller has the greatest number of disks attached to it. The new value for FILLM should be 5 more than twice the number of disks attached to this controller. For example, if there are 12 disks attached to the disk controller with the most disks, calculate the FILLM as follows:

```
FILLM = (2 * 12) + 5
FILLM = 29
```



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Follow these steps to increase the value of FILLM for the SYSTEST account:

- 1 Log in to an account with SYSPRV privilege.
- 2 Enter the following commands to invoke the Authorize Utility:  

```
$ SET DEF SYS$SYSTEM
$ RUN AUTHORIZE
UAF>
```
- 3 Enter the following command to modify the value of FILLM for the SYSTEST account, to display the new value, and to exit from the Authorize Utility:  

```
UAF> MODIFY SYSTEST/FILLM=new-value
UAF> SHOW SYSTEST
UAF> EXIT
$
```

Restart the UETP. The UETDISK00 test image should execute correctly.

### 3.2.6.4

#### Error Messages Sometimes Display an Incorrect Unit Number

The largest unit number that the UETP outputs in the %UETP-E-DESTP error message is 511. Therefore, if an error is generated on a device with a unit number greater than 511 and testing of the device stops, the %UETP-E-DESTP error message displays an incorrect unit number.

For example, if an error terminates the UETDISK00 disk test image on device DUA513, the following error message results:

```
*****
* DISK_NODE$DUA      *
* Error count =  n  *
*****
-UETP-E-TEXT, RMS file error in file NODE$DUA513:NODE$DUA513.TST
-RMS-E-CRE, ACP file create failed
-SYSTEM-F-EXQUOTA, exceeded quota
%UETP-E-DESTP, DISK_NODE$DUA stopped testing NODE$DUA unit 1 at 10:24:26.13
```

If the unit number of the disk is greater than 511, add 512 to the unit number output by the %UETP-E-DESTP error message to obtain the actual unit number of the disk.

### 3.2.6.5

#### Defining a Remote Node for UETP Ethernet Testing

When the UETUNAS00 test of the User Environment Test Package (UETP) executes, it is sometimes difficult to determine whether the problems it reports concern the device under test or the remote device. To ensure that the test properly reports errors on the device being tested, define a "good turnaround." A "good turnaround" is a remote node that you know turns around Ethernet network control packets correctly and is up and waiting in the ready state.

You can make the UETUNAS00 test use a known "good turnaround" by performing the following actions. In the commands that follow, assume that the "good" device is on node BETA and that node BETA is already defined in the network database.

- 1 Find the address of the "good" Ethernet node by using the Network Control Program (NCP). In order to use NCP, the following conditions must apply:
  - DECnet must be up and running on the system.

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- The account you are using must have TMPMBX and NETMBX privileges.

Enter the following commands:

```
$ RUN SYS$SYSTEM:NCP
NCP> TELL BETA SHO CHAR ACTIVE LINES
```

If node BETA has not been defined in your network database, NCP displays an error message. In this event, specify another “good” node and reenter the command. If you cannot find a “good” node, see your system or network manager.

NCP displays information similar to the following:

```
Active Line Volatile Characteristics as of 15-OCT-1986 16:13:02
Line = UNA-0
Counter timer           = 28800
Receive buffers         = 6
Controller              = normal
Protocol                = Ethernet
Service timer           = 4000
Hardware address        = AA-00-04-00-46-D3
UNA device buffer size  = 1498
```

- 2 Use the displayed *hardware address* — in this case, AA00040046D3 — to define the logical name TESTNIADR to point to the “good turnaround.” Note that you do *not* specify the hyphens (-).

First, log in to the SYSTEST account; then, enter the following command:

```
$ DEFINE/SYSTEM TESTNIADR AA00040046D3
```

- 3 Run the UETP.
- 4 When UETP has completed, deassign the logical name TESTNIADR by entering the following command:

```
$ DEASSIGN/SYSTEM TESTNIADR
```

### 3.2.7 VAX/VMS Support of the VAX-11/782 Processor

Version 4.7 is the final version of VAX/VMS that supports the the VAX-11/782 processor. The next major version of VAX/VMS will not support the VAX 11/782.

If you have a VAX-11/782 processor, you have the following four options:

- You can continue to use VAX/VMS Version 4.7 and never upgrade to the next major version of VAX/VMS.
- You can divide the processor into two VAX-11/780 processors.
- If you want to continue using multiprocessing, you can replace your VAX-11/782 with a VAX 8350.
- If your VAX-11/782 processor was used primarily as a performance accelerator, you can replace the VAX-11/782 with an VAX 8600.

Contact your DIGITAL sales representative for further information about these options.

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### 3.2.8 **VAXTPU EDT Keypad Emulator Support**

The VAXTPU EDT Keypad Emulator emulates all keypad functions and some line editing commands of the EDT editor. The EDT Keypad Emulator is supplied in both source and compiled format in Version 4.7 of VAX/VMS.

In the next major release of the operating system, the EVE editor will include support for the EDT keypad. VAX/VMS will no longer supply the EDTSECINI.TPU file. If you want to continue using the VAXTPU EDT Keypad Emulator, we recommend that you save a copy of EDTSECINI.TPU and recompile it after upgrading to the next major version of VAX/VMS.

### 3.2.9 **Asynchronous DDCMP Driver (NODRIVER) — Problem Fixed**

Received-message processing by the asynchronous DDCMP driver (NODRIVER) has been updated to correct previous message processing errors.

### 3.2.10 **Synchronous Driver for DMF32 (XGDRIVER) — Problem Fixed**

Received-message processing by the synchronous driver for DMF32 (XGDRIVER) has been updated to correct previous message processing errors.

### 3.2.11 **DECnet Now Starts Correctly on Satellite Nodes**

In VAX/VMS Version 4.6, when a satellite node was added to a Local Area VAXcluster system, the file NETNODE\_REMOTE.DAT was always deleted from the satellite's root directory. As a result, DECnet could not be started on the satellite node unless a NETNODE\_REMOTE.DAT file existed in the system common root directory. VAX/VMS Version 4.7 corrects this problem.

In Version 4.7, the NETNODE\_REMOTE.DAT file is deleted from the satellite's root directory only if a NETNODE\_REMOTE.DAT file exists in the system common root directory or if the logical name NETNODE\_REMOTE is defined.

### 3.2.12 **DECnet-VAX Device Protection — Problem Fixed**

VAX/VMS Version 4.7 corrects a problem with DECnet-VAX device protection that occurred in Versions 4.5 and 4.6. Before Version 4.7, when users changed a terminal line to an asynchronous DECnet line and then restored the line to a terminal line, the original device protections were not restored. Version 4.7 corrects this problem and restores the original device protection to the terminal line.

### 3.2.13 **DECnet-VAX MAXIMUM RECALLS Parameter — Problem Fixed**

Before Version 4.7, the maximum value for the DECnet X.25 outgoing data link mapping (DLM) circuit parameter MAXIMUM RECALLS was 254. This error has been corrected. The maximum value of this parameter is now 255.



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### 3.2.14 VAXcluster Performance Advisor-Caused Crashes — Problem Fixed

Before Version 4.7, if the VAXcluster Performance Advisor (VPA) optional software product was running on a node in the cluster, shutting down or crashing a node that served local disks sometimes caused the node running VPA to crash. Version 4.7 corrects this problem; when a node that serves local disks is shut down or crashes, the node running VPA does not crash.

### 3.2.15 Batch/Print Facility — Notes

The following notes pertain to the Batch/Print facility.

#### 3.2.15.1 Non-printable Characters Counted — Problem Fixed

Before Version 4.7, the print symbiont counted some non-printable characters as printable characters, thus increasing the column position count and the line count maintained by the symbiont. Because the column count was too high, the print symbiont wrapped text sooner than it should have, resulting in the following problems:

- Tab characters were expanded incorrectly due to errors in horizontal positioning.
- More lines than necessary were printed, increasing accounting information for the number of QIO PUTs and the number of pages printed.

The Version 4.7 print symbiont does not count non-printable characters as printable characters.

#### 3.2.15.2 PRINT Command — Accounting Problem Fixed

Before Version 4.7, the Accounting Utility was unable to count the number of pages in a job submitted with the PRINT/NOFEED command. The /NOFEED qualifier to the PRINT command prevents the print symbiont from performing pagination. The Version 4.7 print symbiont counts form feeds, vertical tabs, and page overflows to determine the number of pages in a job submitted with the PRINT/NOFEED command.

#### 3.2.15.3 /SHEET\_FEED Qualifier to DEFINE/FORM Command — Correction

The Versions 4.4 through 4.6 print symbionts disabled the /SHEET\_FEED qualifier to the DEFINE/FORM command. The Version 4.7 print symbiont reenables the /SHEET\_FEED qualifier. The DEFINE/FORM/SHEET\_FEED command causes the print symbiont to pause after printing each page of a document by placing the queue in the pending state.

#### 3.2.15.4 /SHEET\_FEED Qualifier to DEFINE/FORM Command — Restriction

Do not use the /PAGES qualifier to the PRINT command when submitting jobs to queues on which the DEFINE/FORM/SHEET\_FEED command has been issued. When used with the /SHEET\_FEED qualifier, the /PAGES qualifier causes the print symbiont to enter an infinite loop. The last page of the document prints repeatedly; the symbiont pauses after each page prints. If you encounter this problem, enter the following commands to stop and restart the queue:

```
$ STOP/QUEUE/RESET queue-name  
$ START/QUEUE queue-name
```



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### 3.2.15.5 Device Control Libraries — Problem Fixed

Before Version 4.7, the print symbiont sometimes left device control libraries open. To enhance performance, the print symbiont operates asynchronously most of the time. Device control libraries cannot operate in asynchronous mode. When an asynchronous request to stop a task or stream interrupted a close operation for a device control library, the device control library was left open.

Prior to Version 4.7, the print symbiont opened the device control library as each task started and closed it after each task completed. The Version 4.7 print symbiont opens the device control library when a stream is started and closes the device control library when the stream is stopped. This prevents the close operation from being interrupted by an asynchronous request.

This change to the print symbiont results in two additional benefits:

- The print symbiont performs more efficiently because the device control library is opened and closed less frequently.
- The device control library is more secure; it cannot be modified when it is attached to an active stream.

---

### 3.2.15.6 Tab Expansion Determined at Start of Queue

When the output queue is started, the print symbiont determines if tab expansion is required by accessing the current device characteristics. The print symbiont expands horizontal tabs only when the device is incapable of handling the tab character. On a device controlled by the LCDRIVER or LPDRIVER, the DCL command SET PRINTER/TAB sets the tab characteristic for that device. On a serial line controlled by the terminal driver, the DCL command SET TERMINAL/TAB sets the tab characteristic for that serial device.

The device characteristics for an output queue are determined when the queue is started. Therefore, DIGITAL recommends setting the device characteristics before starting the output queue. If the characteristics of a device need to be reset after the output queue has been started, DIGITAL recommends stopping the queue, resetting the device characteristics, and then restarting the output queue. Please be sure the output queue has stopped completely before changing the device characteristics.

---

### 3.2.15.7 Generation of Blank Pages

In Version 4.0 of VAX/VMS, it was possible to create library setup/reset modules that were output to the device during the processing of the current print job. Setup or reset modules could be output before a specific file, before all files, or after the current job is completed. The Version 4.0 print symbiont incorrectly inserted form feeds after all setup or reset modules regardless of content. In VAX/VMS Version 4.4 and subsequent versions, only those modules that insert printable text are followed by a form feed. No form feed is inserted after a recognized escape sequence, device control sequence, or operating system command.

DIGITAL realizes that certain limitations exist for output devices that require control sequences in the ASCII range of printable characters. Certain limitations may also exist for those devices that allow the user to reposition output to the top of the page after insertion of printable text. DIGITAL believes this area of the symbiont may require additional flexibility beyond that which is currently provided and will continue to investigate these issues.

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### 3.2.15.8 Device Reset Sequence and Form Feed Interaction

Blank pages issued between jobs may be due to interactions between form feed and the device reset escape sequence. Certain programmable devices require the form feed to precede the reset sequence. Extra page problems may be resolved on such devices by inserting a form feed before the reset escape sequence in the device control library module.

### 3.2.16 SET TIME/CLUSTER — Problem Fixed

VAX/VMS Version 4.7 fixes a problem that caused the SET TIME/CLUSTER command to report incorrect timeout errors on large clusters.

The SET TIME/CLUSTER command will be superseded by a more general mechanism for handling clusterwide system management in the next major release of the VAX/VMS operating system.

### 3.2.17 Installing Optional Software Products on Tailored Systems

Sites using small-disk tailored systems must perform the following editing operation before installing any of the VAX/VMS optional software products listed in Table 3-1. Optional software products not listed can be installed normally. Please refer to the *System Software Order Table* (SPD 28.98.xx) for the latest versions of these optional software products and for the processor configurations supported by each.

- 1 Log in to the SYSTEM account.
- 2 Set the default directory to SYS\$UPDATE, by entering the following command:  
  
\$ SET DEFAULT SYS\$UPDATE
- 3 Using a text editor, edit the file LIBRARY.TLR and remove the following line:  
  
[SYSEX]SYS.STB
- 4 Exit from the text editor, thus creating a new version of the file.
- 5 Using the text editor, edit the file REQUIRED.TLR and add the following line:  
  
[SYSEX]SYS.STB
- 6 Exit from the text editor, thus creating a new version of the file.
- 7 Invoke the Tailoring command procedure and rename the library disk file as follows:

```
$ @SYS$UPDATE:vmstailor
TAILOR> DISMOUNT
TAILOR> MOUNT/WRITE ddcu: ! where ddcu: is the library disk
TAILOR> COPY/FILE SYS.STB ! copies SYS.STB to the system disk [SYSEX]
                        ! using the default source and target
                        ! locations
TAILOR> EXIT
$ SET DEFAULT ddcu:[SYS0.SYSEX] ! where ddcu: is the library disk
$ RENAME SYS.STB LIBSYS.STB    ! Rename the library disk version;
                                ! the file remains unchanged on the
                                ! system disk.
```

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- 8 Enter the following command to reset the default directory to SYS\$UPDATE:

**\$ SET DEFAULT SYS\$UPDATE**

- 9 Install the optional software product using VMSINSTAL.

This operation ensures that products requiring the system global symbol table at link time during installation will find the file in the REQUIRED file group. All files that are not members of the REQUIRED file group are tailored to the library disk by VMSINSTAL during installation. The system disk is restored to its original configuration upon completion of the VMSINSTAL command procedure.

Step 7 above ensures that VMSINSTAL does not find SYS.STB on the library disk and prevents its subsequent forced removal from the system disk, which would cause the installation to fail. Renaming the file on the library disk allows you to maintain a backup copy.

Any "File not found" messages that occur during installation of an optional software product can be corrected by repeating the previously listed steps to move the file to the system disk.

See Section 3 of the *VAX/VMS System Manager's Reference Manual* for additional information.

**Table 3-1 Products That Require the Editing Operation for Installation on a Tailored System**

---

ALL-IN-1
DRB32 VMS DRIVERS
DRX11-C VMS DRIVER
IEX-VMS-DRIVER
MUX200/VAX
VAX COMMON DATA DICTIONARY
VAX DBMS
VAX DRE11-C DEVICE DRIVER
VAX DRIVER FOR 11C03
VAX DEC/MAP
VAX PRODUCER
VAX PRODUCER INTERPRETER
VAX SPM
VAX TDMS
VAX-11 TSU05 DEVICE DRIVER
VAXINFO I
VAXINFO II
VAXINFO III
VS11-VAX DRIVER

---



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### 3.2.18 Booting From Multiple UDA50 Systems — Restrictions

If you plan to bootstrap from a UDA50-supported device, there are two restrictions you must keep in mind when you configure your system:

- 1 Each UNIBUS up to (but not including) the one that supports the bootstrap device must have exactly one UDA50. Each UNIBUS, from the bootstrap device upwards, can have up to the legally allowable number of UDA50s.
- 2 You can bootstrap only from the first UDA50 on a UNIBUS (that is, the one with the fixed CSR and vector).

If your system is a VAX-11/750, then the maximum unit number that can be bootstrapped is hexadecimal 'F' (decimal 15).

### 3.2.19 DMB32 Product Software Required for DMB32 Communications Controller

VAX 8200/8250/8300/8350 and VAX 8530/8550/8700/8800 systems that include the DMB32 communications controller must install the DMB32 optional software product in order to use the controller's synchronous port. The VAX/VMS kit does not contain the DMB32 software.

### 3.2.20 Permanent MONITOR Server Processes

Creating permanent MONITOR server processes on each member node in a cluster at bootstrap time can significantly reduce server startup time.

To create such a process, add the following lines to the appropriate startup command procedures. Be sure that you allot a page file quota of at least 10,000 pages.

```
$ DEFINE/SYSTEM/EXECUTIVE_MODE VPM$SERVER_LIVE TRUE  
$ RUN/DETACH/PAGE_FILE=10000 SYS$SYSTEM:VPM.EXE
```

You can also enter these commands interactively at any time from an account that has the following privileges: ALTPRI, NETMBX, PSWAPM, SYSNAM, SYSPRV, and TMPMBX.

### 3.2.21 MONITOR CLUSTER — Misleading I/O Rates for MSCP Served Disks

The MONITOR CLUSTER command for the MONITOR utility can produce misleading I/O rates for mass storage control protocol (MSCP)-served disks.

For MSCP-served disk I/O, VAX/VMS increments the operation count on the remote node *and* the node on which the disk is served. When you enter the MONITOR CLUSTER command, MONITOR calculates the displayed I/O rate by calculating the sum of the operation counts for all contributing nodes. As a result, MONITOR counts some I/Os more than once; reported I/O rates for MSCP-served disks might be higher than actual rates.

To produce more meaningful I/O rates for MSCP-served disks, use the MONITOR DISK command on the nodes that serve the disk. For each disk, the sum of these I/O rates is the rate of actual I/Os issued in support of all remote and local I/O requests for that disk.



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### 3.2.22 LAT Print Symbiont (LATSYM) — Problems Fixed

Version 4.7 corrects the manner in which the LAT print symbiont (LATSYM) processes some error conditions. The LATSYM process no longer loops nor crashes when it encounters these error conditions. The Version 4.7 LATSYM.EXE image is larger than the V4.6 version, since it now includes nonshareable copies of the VMS common print symbiont routines.

### 3.2.23 LAT Control Program — Problems Fixed

The following two LAT problems have been fixed in VAX/VMS Version 4.7:

- You no longer receive the "repeat create of slot by server" error message when a channel is assigned to an interactive LAT device by another process.
- The STOP NODE command no longer causes a VAX 8800 processor to fail (crash).

### 3.2.24 LAT-11 Optional Software Product — Problems Fixed

This section discusses problems and limitations when using the LAT-11 software that runs on a PDP-11 configured to serve terminals.

#### 3.2.24.1 Bad Message Received Error

The LAT-11 software registers a bad message received error for a service node that sends out a configuration message without any services. This can happen if an incorrect sequence is used when starting up the service node. Include the following command sequence in the LTLOAD.COM file to start up the service node automatically, or enter the following command sequence interactively to start up the service node manually:

- 1 Include the SET NODE command to set the node name and characteristics
- 2 Include the CREATE SERVICE and LCP SET SERVICE commands to set up the services for the node
- 3 Include the START NODE command to start LAT service on the node

The LAT-11 software also registers a bad message received error if a service node offers more than two services. Do not enable more than two services on any node accessed by LAT-11.

#### 3.2.24.2 Cluster Nodes Not Accessible by LAT-11

The LAT-11 software requires that the first service name offered by a VAX/VMS node be the node name. For a VAXcluster, the cluster service name must be the second service name offered by the VAX/VMS node. All other DIGITAL terminal server products require only a cluster service name.

Add the following command line to your LTLOAD.COM file before the command line that starts the node:

```
$ LCP CREATE SERVICE cluster-service-name /IDENTIFICATION/NOLOG
```

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The sample LTLOAD.COM file in Example 3-1 shows you where to enter this command line.

### Example 3-1 Sample LTLOAD.COM File for Use with LAT-11

---

```
$ ! This command procedure starts up the LAT protocol and
$ ! is compatible with LAT-11.
$ !
$ RUN SYS$SYSTEM:SYSGEN
    CONNECT LTAO/NOADAPTER
$ !
$ ! Invoke LATCP
$ !
$ LCP := $LATCP
$ !
$ ! The following commands set up LAT service with the
$ ! default name SYS$NODE and default ident SYS$ANNOUNCE.
$ ! The first LAT service name defaults to the node name
$ ! SYS$NODE. YOU MUST SPECIFY a clusterwide service name
$ ! as the first parameter in the command line. Use the
$ ! remaining parameters to specify values for other node
$ ! characteristics, such as group codes.
$ !
$ LCP SET NODE /IDENTIFICATION 'P2' 'P3' 'P4' /NOLOG
$ LCP CREATE SERVICE /IDENTIFICATION ! Fix for LAT-11 bug
$ ! Provide cluster service name as P1
$ LCP CREATE SERVICE 'P1' /IDENTIFICATION/NOLOG
$ LCP START NODE
$ EXIT
```

---

#### 3.2.24.3 New Features Not Supported

The LAT-11 software does not support the new functions provided by the Version 4.7 LAT/VMS software. You cannot connect a remote printer using the LAT-11 software. However, all LAT functions previously supported by LAT-11 still work with VAX/VMS Version 4.7.

## 3.2.25 LAT/VMS Problems

---

This section discusses problems affecting the LAT/VMS software and suggested solutions for those problems.

#### 3.2.25.1 Delay in Process Disconnect

If virtual terminals are enabled on your system and you enter a terminal server DISCONNECT command, the process is not deleted immediately. The process is deleted when the timeout period expires. This is normal and should be expected.

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## 3.2 System Manager Information

---

### 3.2.25.2 LATCP Command STOP NODE

The STOP NODE command deletes the current node characteristics. Avoid using the following sequence of commands:

```
LCP> STOP NODE  
LCP> START NODE
```

Instead of using these commands, invoke the LTLOAD.COM file or set up the characteristics for your node manually with the SET NODE and SET SERVICE commands.

Note that, if you enter the LATCP command STOP NODE, all LAT terminal users are disconnected from the node and a process rundown is initiated.

---

### 3.2.25.3 LATCP and the DELETE PORT command

The DELETE PORT command does not shut down a session correctly when it is used on a port with an active session. Use the DELETE PORT command only for inactive application ports.

---

### 3.2.25.4 Solicit Connection QIO

Do not enter the solicit connection QIO if LATCP has not yet started the LAT protocol. The QIO request may not complete and will not return an error.

---

### 3.2.25.5 LAT PASSALL Session

When using a host-initiated connection with the UCB set to the PASSALL characteristic, the terminal server's input flow control for the port is disabled. This is normal behavior.

---

## 3.2.26 Booting a Satellite Node During SATELLITE\_CONFIG.COM ADD Phase

When a Local Area VAXcluster satellite node boots during the SATELLITE\_CONFIG.COM procedure's ADD phase, another command procedure, SYS\$MANAGER:NETCONFIG.COM, executes. NETCONFIG.COM invokes the Network Control Program (NCP) and Authorize Utilities, which display various informational and error messages. You can ignore these messages.

---

## 3.2.27 Rebooting a Satellite Node With an Operating System On a Local Disk

In some circumstances, cluster software reboots Local Area VAXcluster satellite nodes automatically. Before booting a satellite node, the boot procedures check for the presence of an operating system on the node's local disk. If an operating system (for example, a MicroVMS system) is found, that system — *not the Local Area VAXcluster system* — is booted.

If an operating system is installed on a satellite's local disk, *one* of the following measures should be taken before performing any operation that causes an automatic reboot — for example, executing SYS\$SYSTEM:SHUTDOWN.COM with the REBOOT option or using SATELLITE\_CONFIG.COM to add that node to the cluster:

- Rename the directory file ddcu:[000000]SYS0.DIR on the local disk to ddcu:[000000]SYSx.DIR (where SYSx is a root other than SYS0 or SYSE). In the following example, SYS0 is renamed SYS1:

```
$ RENAME DUAO: [000000]SYS0.DIR DUAO: [000000]SYS1.DIR
```



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Then enter the DCL command SET FILE/REMOVE to remove the old directory entry for the boot image SYSBOOT.EXE.

```
$ SET FILE/REMOVE DUA0:[SYSEXE]SYSBOOT.EXE;
```

For subsequent reboots of the system from the local disk, enter a command in the format B/x0000000 at the console-mode prompt (> > > ), as in the following example:

```
>>> B/10000000
```

- Disable the local disk. To disable the local disk on MicroVAX II or VAXstation II machines, press the READY button so that the light is off. (This option is not available if the satellite's local disk is being used for paging and swapping.)

### 3.2.28 Dual-Ported Non-DSA Disks in a VAXcluster — Restriction

Do not enter the SYSGEN commands AUTOCONFIGURE or CONFIGURE to configure a dual-ported, non-DSA disk that is already available on the system via an MSCP server. Establishing a local connection to the disk when a remote path is already known creates two uncoordinated paths to the same disk. Use of these two paths can corrupt files and data on any volume mounted on the drive.

In a VAXcluster, dual-ported non-DSA disks (MASSBUS or UNIBUS) can be connected between two nodes of the cluster. These disks can also be made available to the rest of the cluster using the MSCP server on either or both of the hosts to which a disk is connected.

If the local path to the disk is not found during the bootstrap, then the MSCP server path from the other host is the only available access to the drive. The local path is not found during a boot if any of the following conditions exist:

- 1 The port select switch for the drive is not enabled for this host.
- 2 The disk, cable, or adapter hardware for the local path is broken.
- 3 There is sufficient activity on the other port to "mask" the existence of the port.
- 4 The system is booted in such a way that the SYSGEN command AUTOCONFIGURE ALL in the SYS\$SYSTEM:STARTUP.COM procedure was not executed.

Use of the disk is still possible through the MSCP server path.

Once the configuration of the disk has reached this state, it is important *not* to add the local path back into the system I/O database. Since there is no automatic method for this to occur in VAX/VMS, the only possible way that this could occur would be to use the SYSGEN Utility command AUTOCONFIGURE or CONFIGURE to configure the device. SYSGEN is currently not able to detect the presence of the disk's MSCP path and incorrectly builds a second set of data structures to describe it. Subsequent events could lead to incompatible and uncoordinated file operations, which might corrupt the volume.

In order to recover the local path to the disk, it is necessary to reboot the system connected to that local path.



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Note that, if the disk is *not* dual-ported or is *never* MSCP-served on the remote host, this restriction does not apply.

### 3.2.29 Some VAX Hardware Names Not Recognized

The VAX 8250, VAX 8350, and VAX 8530 are new VAX processors. The VAX 8250 and VAX 8350 are enhanced systems that provide greater performance than the standard VAX 8200 and VAX 8300. These processors use the KA825 CPU instead of the KA820 CPU; the KA825 is 20 percent faster than the KA820. The VAX 8530 is an enhanced 8500 system with new microcode that provides a 33 percent increase in performance.

VAX/VMS utilities, such as SYSGEN, SDA, SHOW CLUSTER, and the GETSYI system service, have not yet been modified to recognize the three new VAX model numbers. This results in VAX/VMS incorrectly identifying the new systems with the older VAX model number. A future release of the operating system will correctly identify the new systems.

You can make the distinction between the VAX 8200/8300 and the VAX 8250/8350 using the ANALYZE/ERROR utility. Each error log entry for the VAX 8250 and 8350 systems correctly identifies the CPU type as KA825. You can also use the System Dump Analyzer (SDA) to examine the System Identification (SID) register as follows:

```
$ ANALYZE/SYSTEM  
SDA> SHOW CRASH
```

You can find the SID under the listing of the internal processor registers. The VAX 8250/8350 systems have bit 23 of the SID set to one, while the VAX 8200/8300 systems have bit 23 set to zero.

### 3.2.30 AUTOGEN Command Procedure

The following problems with the AUTOGEN command procedure have been corrected in Version 4.7.

#### 3.2.30.1 Possible DEQNA Problem Avoided

Under heavily loaded conditions, the DEQNA Ethernet adapter in a large and complex Ethernet configuration may receive corrupted data. To avoid this problem, AUTOGEN enables software receive packet checksumming by setting the value of the SYSGEN parameter PE5 to 2 on Local Area VAXcluster members with DEQNAs.

Since AUTOGEN cannot distinguish between DELQAs and DEQNAs, Local Area VAXcluster members with DELQAs receive a value of 2 for PE5, as well. DELQAs do not exhibit this problem; therefore, if you have Local Area VAXcluster members with DELQAs, you might want to explicitly set PE5 equal to 0 in MODPARAMS.DAT for those nodes to avoid the cost of software receive packet checksumming.

# Corrected Problems, Restrictions, and Notes

## 3.2 System Manager Information

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### 3.2.30.2 VMSIMAGES.DAT Not Created for Version 4.6

VMSIMAGES.DAT, the default installed image list, was not created on some MicroVAX systems that were *upgraded* from MicroVMS Version 4.5 to VAX/VMS Version 4.6. These systems were upgraded from the MicroVMS operation system to the VAX/VMS operating system in order to form a Local Area VAXcluster environment. VMSIMAGES.DAT was created correctly for all sites that *installed* VAX/VMS Version 4.5A or VAX/VMS Version 4.6 on MicroVAX systems.

In Version 4.7, AUTOGEN guarantees that VMSIMAGES.DAT is created for all Local Area VAXcluster members.

---

### 3.2.30.3 LOCKDIRWT Parameter Calculation Corrected

In Version 4.6, the value of the SYSGEN parameter LOCKDIRWT was incorrectly calculated for all Local Area VAXcluster members that had a VAX 8530 as a boot node. This is the only configuration in which this problem existed. When you run AUTOGEN after completing the Version 4.7 update, the value for the SYSGEN parameter LOCKDIRWT is calculated correctly.

---

### 3.2.31 Diskette Devices and the MSCP Server

The Mass Storage Control Protocol (MSCP) does not allow all the functions associated with a diskette device. Therefore, the MSCP Server (which is based upon MSCP) does not allow diskette devices such as the RX01, RX02, and RX33 to be served. See the *VAX/VMS DCL Dictionary* and *VAX/VMS System Manager's Reference Manual* for more information.

---

### 3.2.32 Protection of Security Auditing Information

Because the operator log file (SYS\$MANAGER:OPERATOR.LOG) contains all of the security auditing information, it is possible to lose auditing information if the disk on which this file resides becomes full.

While a well managed system will normally have adequate storage capacity, unexpected circumstances can cause excessive consumption of disk space. If all blocks on the disk are in use, a situation may arise where audit data could be lost. The National Computer Security Center (NCSC) has requested, as part of the evaluation of the VAX/VMS operating system, that a warning be issued whenever this condition occurs.

The NCSC requirement is that a message be issued prior to any audit data being lost and in sufficient time to allow the corrective action to be taken before all free blocks are exhausted.

To honor this requirement, DIGITAL is supplying the following procedure for users who want to operate VAX/VMS as a Class C2 evaluated system. This procedure samples the available free blocks at a specified interval. The default sampling interval is every ten minutes. If the free space on the disk is less than a specified threshold, warning messages are issued to all terminals that have been enabled as operator terminals. The default threshold is 1% of the maximum available blocks.

# Corrected Problems, Restrictions, and Notes

## 3.2 System Manager Information

The following command procedure, while fully functional, is provided as a guideline to be tailored to your specific requirements:

```
$ !      SYS$MANAGER:AUDIT_GUARD.COM
$ !
$ !      Procedure to protect the audit trail when the system disk is
$ !      approaching capacity.
$ !
$ ! User adjustable parameters.  If no parameters are specified on the
$ ! command line, supply the default values.
$ $ IF P1.EQS."" THEN
$ P1 = "00:10"
$ IF P2.EQS."" THEN
$ P2 = 1
$ !
$ INTERVAL = P1          ! Sample remaining disk space at 10-minute intervals
$ THRESHOLD = P2          ! Report shortage when 1% of disk blocks are free
$ !
$ ! Determine the parameters for the device on which the operator log file
$ ! is located.
$ ! $ SET PROCESS/PRIVILEGE=OPER
$ LOG_FILE = F$SEARCH("SYS$MANAGER:OPERATOR.LOG") ! For search lists
$ IF LOG_FILE.EQS."" THEN
$ GOTO NO_LOG_FILE
$ ! $ AUD_DEV = F$PARSE (LOG_FILE,,, "DEVICE", "NO_CONCEAL")
$ MAX_BLOCKS = F$GETDVI(AUD_DEV, "MAXBLOCK")
$ FREE_BLOCK_LIMIT = (MAX_BLOCKS * THRESHOLD)/100
$ !
$ ! Sit in a loop, checking the amount of available free space.
$ ! $ C2_LOOP: $ REMAINING = F$GETDVI(AUD_DEV, "FREEBLOCKS")
$ IF (REMAINING .GT. FREE_BLOCK_LIMIT) THEN
$ GOTO PAUSE
$ !
$ ! If the amount of free space drops below the selected threshold, report
$ ! the condition.
$ !
$ REQUEST  "ONLY 'REMAINING' BLOCKS AVAILABLE ON AUDIT TRAIL DISK!"
$ REQUEST  "PLEASE TAKE CORRECTIVE ACTION!"
$ !
$ ! Wait before checking the free space.
$ !
$ PAUSE:
$ WAIT 'INTERVAL'          ! Wait the interval before looking again.
$ GOTO C2_LOOP              ! Time to look again
$ !
$ ! If there is no log file, report it, and then exit cleanly.
$ !
$ NO_LOG_FILE:
$ REQUEST  "NO AUDITING INFORMATION KEPT DUE TO MISSING OPERATOR LOG FILE"
$ !
$ EXIT
```

You can edit command procedure to be sure its operation is appropriate for your specific environment. You can redirect messages to a specific device (for example, OPA0:) by using the REPLY command or to a specific operator function by using the /TO= switch with the REQUEST command. You may also want to alter the sampling rate and threshold used by this procedure.



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## 3.2 System Manager Information

The two parameters for doing this follow:

INTERVAL	Delta time used to control the sampling rate for checking the remaining disk space and issuing the warning message.
THRESHOLD	Value representing a percentage of free blocks remaining on the disk relative to the total available blocks. Warning messages are generated if the percentage of free blocks remaining on the disk falls below this value.

When you run the command procedure, messages are output at the sampling rate specified by the INTERVAL parameter until action has been taken to increase the number of available free blocks above the THRESHOLD value.

Once started, this procedure continues to execute until it is either stopped by a privileged user or until the system is rebooted.

To ensure that this procedure executes each time you bootstrap the system, add the following command to your site-specific startup command procedure (SYS\$MANAGER:SYSTARTUP.COM):

```
$ SUBMIT SYS$MANAGER:AUDIT_GUARD /NOLOG
```

---

### 3.2.33 Forced Error Handling

Most VAX/VMS utilities and DCL commands treat the presence of the forced error flag as a fatal error. For example, if you use the DCL command COPY to move a file that contains a block with the forced error flag, the resulting error causes the operation to terminate.

The Backup Utility, however, is designed to continue in the presence of almost all errors, including forced errors; BACKUP continues to process the file, creating a new copy of the file in the output saveset. An error message indicating the forced error is displayed, but the forced error is *not* present in the new copy of the file that is being created. Subsequent use of the new file (for example, in a restore operation) will indicate no errors. Thus, data that was formerly marked as bad with the forced error flag may be accidentally propagated and now seem correct.

System managers (and other users of BACKUP) should assume that forced errors reported by BACKUP signal degradation of the data in question and should act accordingly. The safest procedure is to replace the file containing the forced error with a good copy of the file from a previous BACKUP operation.

For more information on DIGITAL Storage Architecture (DSA) and forced errors, see the *VAX/VMS I/O User's Reference Manual: Part I*.

---

### 3.2.34 SYSGEN — Notes and Restrictions

This section contains information related to the System Generation Utility (SYSGEN).



# Corrected Problems, Restrictions, and Notes

## 3.2 System Manager Information

---

### 3.2.34.1 UDABURSTRATE Parameter

The UDABURSTRATE parameter is dependent upon configuration and workload. Alteration of the default value can have serious side effects. Consult your DIGITAL Field Service representative before changing the default value of this parameter.

---

### 3.2.34.2 SYSGEN Confuses CONSOL.SYS on VAX-11/780 and VAX-11/785 Systems

If you specify the SYSGEN command CONNECT OPA1 on a VAX 11/780 or VAX 11/785 system, the console software running in the 11/03 will be corrupted. Any attempt to access the console floppy diskette results in an I/O timeout and the floppy diskette being unusable.

Furthermore, if you are attempting to reboot the system from a HSC disk controller, the system displays the following message:

CANNOT FIND CI MICROCODE FILE

The message indicates that, although DEFBOO.COM and VMB.EXE can be read without problems, the access path to the front end through the CIB board cannot be used. The only strategy is to turn off the power to the 11/03 subsystem and to reload CONSOLE.SYS.

---

### 3.2.35 User-Created Cluster Quorum File Problem

The cluster quorum file QUORUM.DAT is automatically created by the cluster connection manager when the system is booted for the first time with the SYSGEN parameter DISK\_QUORUM specified. The connection manager creates the quorum file with the appropriate attributes and supplies the initial template entry. Therefore, one should not attempt to create a quorum file manually. Doing so may cause the quorum disk to be corrupted.

---

### 3.2.36 VMSINSTAL Option N — Compatibility Problem

Use of the VMSINSTAL Option N to display or print optional software product release notes is not compatible with earlier VMSINSTAL Option A, which uses autoanswer files to supply answers to questions output by the VMSINSTAL command procedure. Because Option N did not exist on previous versions of VAX/VMS, there was no way that it could be stored in the autoanswer file. As a result, use of an Option A with Option N produces the following error messages:

```
%VMSINSTAL-F-AUTOSYNC, Autoanswer file is not in synch with questions.  
-VMSINSTAL-F-AUTOSYNC, question: * Select option [3]:  
-VMSINSTAL-F-AUTOSYNC, file:      * Do you want to purge files replaced by  
                                this installation [YES]?  
%VMSINSTAL-F-UNEXPECTED, Installation terminated due to unexpected event.  
VMSINSTAL procedure done at 14:00
```

The solutions are either to not use Option A with Option N or to recreate the autoanswer file before installing the optional software product.

The N option allows the installer to view or print, or both view and print, the online release notes for those optional software products that support online release notes.

# Corrected Problems, Restrictions, and Notes

## 3.2 System Manager Information

**Note:** Currently, not all optional software products support online release notes. Use of Option N in these cases produces no difference in the flow of the installation procedure.

---

### 3.3 Application Programmer Information

This section describes problems resolved in VAX/VMS Version 4.7, lists known restrictions, and contains other information of interest to the application programmer.

---

#### 3.3.1 Appending to Shared Sequential Files

The use of the RMS Deferred Write option with sequential files opened for shared append access could result in file corruption. To avoid corruption, the Deferred Write option is automatically disabled for shared sequential files. Use of Deferred Write with shared append access to sequential files is expected to be reenabled in a future release of VAX/VMS.

---

#### 3.3.2 Caution on Use of NOP Instruction as a Delay Mechanism

DIGITAL recommends that you do *not* use the VAX MACRO instruction NOP (No Operation) as a means of delaying program execution.

The delay time caused by the NOP instruction is dependent on processor type. For instance, the VAX 8600, VAX 8650, VAX 8800, VAX 8700, VAX 8550, or VAX 8530 processors execute the NOP instruction more quickly than other VAX processors.

Whenever you must have a program wait for a specified time period, you should use a macro or code sequence that is not dependent on the processor's internal speed. For example, you can use the TIMEWAIT macro, which is documented in the *Writing a Device Driver for VAX/VMS* volume. You can also use the Set Timer (\$SETIMR) and Wait for Single Event Flag (\$WAITFR) system services, as described in the *VAX/VMS System Services Reference Manual*, to force such delays.

---

#### 3.3.3 Debugger

The following notes pertain to the debugger.

---

##### 3.3.3.1 Debugger — CTRL/Y Problem Fixed

A problem concerning how the Version 4.6 debugger handled CTRL/Y followed by the DCL command DEBUG has been corrected in Version 4.7.

This problem occurred if a program signaled an informational or success message but did not handle the message itself. The following BLISS fragment is an example:

```
SIGNAL(1)                ! Success signal
WHILE 1 DO (X = .X + 1);  ! Infinite loop
```

# Corrected Problems, Restrictions, and Notes

## 3.3 Application Programmer Information

In such cases, the Version 4.6 debugger correctly intercepted the signal, displayed the informational or success message, and let the program continue executing. However, if you then interrupted the program with CTRL/Y and subsequently tried to invoke the debugger with the DCL command DEBUG, the debugger did not suspend execution and did not display its prompt, as shown in the following example:

```
DBG> RUN PROG1
(DEBUG V4.6)
.
.
.
DBG> GO
%SYSTEM-S-NORMAL, normal successful completion
! The above is the display of the message associated with SIGNAL(1).
.
.
.
! Infinite loop
<CTRL/Y>
Interrupt
$ DEBUG
.
.
.
! Still in an infinite loop.
```

Starting with Version 4.7, this problem has been corrected so that the sequence CTRL/Y—DEBUG now correctly interrupts a program that has signaled an informational or success message without handling that signal, as the following example shows:

```
DBG> RUN PROG1
(DEBUG V4.7)
.
.
.
DBG> GO
%SYSTEM-S-NORMAL, normal successful completion ! Message for SIGNAL(1).
.
.
.
! Infinite loop.
<CTRL/Y>
Interrupt
$ DEBUG
DBG> ! You're out of the infinite loop and back at the prompt.
```

### 3.3.3.2 Using the Debugger on a VAXstation — Problem

When you invoke the debugger on a VAXstation, the debugger comes up in its own window. There is a problem with the handling of CTRL/Y when the debugger is running in its own MicroVAX window. CTRL/Y is ignored when the keyboard is attached to the debugger window. To make CTRL/Y take effect, attach the keyboard to the window from which you invoked the debugger (by pointing at that window with the mouse); then, press CTRL/Y.

This problem will be corrected in a future release of the operating system.



# Corrected Problems, Restrictions, and Notes

## 3.3 Application Programmer Information

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### 3.3.3.3 Debugging SMG Programs — Restriction

The debugger now uses the VAX/VMS Screen Management Facility (SMG) to implement screen mode. If your program also calls SMG routines and you debug it with the debugger running on the same terminal, there is likely to be interference between your program and the debugger.

To avoid this problem, debug the program using two terminals. This technique is described in Appendix D of the *VAX/VMS Debugger Reference Manual*.

---

### 3.3.3.4 SET SCOPE Command

Before entering the SET SCOPE command, be sure that the module containing the elements named in the path name has already been set, either dynamically by the debugger or by means of a SET MODULE command. Enter the SHOW MODULE command to determine whether a module is set (that is, whether its symbols have been loaded into the run-time symbol table).

---

### 3.3.3.5 SET IMAGE Command

When you enter a SET IMAGE command and specify a list of images, only the last image in the list is set, as shown in the following example:

```
DBG> SET IMAGE A,B,C
```

In this example, only image C is set. To set images A, B, and C, enter separate SET IMAGE commands for each image.

---

## 3.3.4 Correction to \$GETLKI System Service

The \$GETLKI system service does not report user buffer overflow as documented for item codes LKI\$\_LOCKS, LKI\$\_BLOCKEDBY, and LKI\$\_BLOCKING in the *VAX/VMS System Services Reference Manual*. When used with an item descriptor specifying any of these item codes, \$GETLKI does *not* set bit 31 of the **return length address** in the item descriptor when the user-supplied buffer is too small to hold the requested data.

Before Version 4.5, the LKI\$\_LOCKS item code, when used on a locally mastered lock, caused the entire **return length address** field to become invalid. Version 4.5 (and subsequent versions) partially corrects this behavior, so that LKI\$\_LOCKS works as documented, *except* that bit 31 is not set as in the case described above. The result is that all three \$GETLKI item codes that return lengthy information (LKI\$\_LOCKS, LKI\$\_BLOCKEDBY, and LKI\$\_BLOCKING) behave in the same (incorrect) fashion.

Bit 31 of the **returned length address** never indicates when the user-supplied buffer is too small. To solve this problem, DIGITAL suggests the following rule:

The user buffer size *may* be inadequate if the sum of the low word of the returned length and the high word of the returned length is greater than the size of the user buffer supplied.

DIGITAL expects to correct this problem in a future release of the operating system.



## Corrected Problems, Restrictions, and Notes

### 3.3 Application Programmer Information

#### 3.3.5 Ethernet Protocol Types are Validated — Restriction

Since Version 4.6, the protocol type parameter has been validated whenever you start a channel to an Ethernet driver that receives messages in Ethernet packet format. Valid protocol types range from 05-DD (hexadecimal) to FF-FF (hexadecimal). If you specify an illegal protocol type value, the start request fails and you receive the error message SS\$\_BADPARAM.

#### 3.3.6 The Broadcast Address Must be Enabled to Receive Broadcast Messages — Planned Change

In the next major release of the VAX/VMS operating system, broadcast messages will be delivered to an Ethernet application only if the application has enabled the broadcast address as a multicast address. If your Ethernet application requires acceptance of broadcast messages to successfully complete READ requests, the application should enable the broadcast address as a multicast address. Make this modification to your Ethernet application before installing the next major release of VAX/VMS operation system software. This will ensure that your Ethernet application will continue to operate properly when the new Ethernet driver is installed.

#### 3.3.7 NMA\$C\_PCLI\_PAD Parameter for Ethernet Packet Format Only — Planned Change

In the next major release of the VAX/VMS operating system, the NMA\$C\_PCLI\_PAD parameter will be valid only for Ethernet channels that have the NMA\$C\_PCLI\_FMT parameter set to NMA\$C\_LINFM\_ETH. If the NMA\$C\_PCLI\_PAD parameter is passed on a channel that does not have the NMA\$C\_PCLI\_FMT parameter set to NMA\$C\_LINFM\_ETH, the I/O request fails and you receive the error message SS\$\_BADPARAM.

#### 3.3.8 Ethernet/802 Drivers — Planned Change

Software currently utilizing the promiscuous mode feature of the Ethernet/802 drivers may need to be modified to run properly on future releases of the operating system. (See Chapter 6 of the *VAX/VMS I/O User's Reference Manual: Part II* for a description of these drivers.) Since the Ethernet/802 drivers now allow a wide variety of packets to be transmitted and received, some restrictions will be placed on channels that turn on the promiscuous mode (NMA\$C\_PCLI\_PRM) parameter. When this parameter is turned on, the following rules will apply:

- Both Ethernet and IEEE 802 formatted packets will be received. The P5 buffer, if specified, must be at least 20 bytes long.
- Only one type of packet may be transmitted: either Ethernet or IEEE 802. The value of the NMA\$C\_PCLI\_FMT parameter will be used to determine which format will be used for transmissions.
- The NMA\$C\_PCLI\_PAD parameter will be ignored during READ operations on channels that are running in promiscuous mode.

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## 3.3 Application Programmer Information

- The promiscuous mode channel may not be put into SHARED access mode. Attempts to put the promiscuous mode channel into shared mode will result in an SS\$\_BADPARAM error.

Applications using the promiscuous mode feature should note these planned restrictions. Those applications should be modified to run within these restrictions before the restrictions are applied and shipped in the VAX/VMS Ethernet/802 drivers.

### 3.3.9 Ethernet Controller — List of Expected Errors

Some Ethernet controllers support features that allow them to communicate with the hardware outside the VAX system to detect hardware failures. If the hardware connected to the Ethernet controller does not support these "hardware failure detection" features, then the controller and driver will report errors that are not true errors.

To facilitate the detection of true errors, use the following list of "expected" errors to eliminate those errors caused by the lack of hardware failure detection support:

- When using the DEQNA with the DECOM transceiver, a "Send failure" with reason code "Short circuit" is reported for each packet transmitted.
- When using the DEUNA or DELUA with broadband, a "Collision detect check failure" is reported for each packet transmitted.

See Section 6 of the *VAX/VMS I/O User's Reference Manual: Part II* for a discussion of these controllers.

---

## 3.4 System Programmer Information

This section describes problems resolved in VAX/VMS Version 4.7, lists known restrictions, and contains other information of interest to the system programmer.

### 3.4.1 IOC\$ALLOSPT Routine Will be Replaced

The IOC\$ALLOCPT routine, documented in Appendix A of the *VAX/VMS Supplemental Information, Version 4.7*, will be replaced by a new routine in the next release of the operating system.

### 3.4.2 IO\$\_RESET Modifier

Prior to Version 4.2, the IO\$\_RESET function modifier had the same value as the IO\$\_INHERLOG modifier, which inhibits error logging. Because the IO\$\_RESET bit was used only by the DR11-W driver, Version 4.2 changed the value of IO\$\_RESET to decouple it from the IO\$\_INHERLOG bit. It is important to note that the change also affects user-written drivers that use the IO\$\_RESET modifier.

To avoid possible problems, you should concurrently reassemble the following:

- All user-written drivers that use the IO\$\_RESET modifier

# Corrected Problems, Restrictions, and Notes

## 3.4 System Programmer Information

- All programs that perform QIOs to user-written drivers that use the IO\$M\_RESET modifier

### 3.4.3 LPA11-K Driver (LADRIVER) — Changing Timeouts Allowed

The driver for the LPA11-K (LADRIVER) times out all \$QIOs after two seconds if they have not completed. The driver does not provide any parameters that allow the user to change the length of the timeout.

In VAX/VMS Version 4.4 and subsequent versions, the timeout period that is applied to all \$QIOs can be changed with the following patch commands executed from a suitably privileged account:

```
$ PATCH SYS$SYSTEM:LADRIVER.EXE/OUTPUT=SYS$SYSTEM:LADRIVER.EXE
PATCH> SET ECO 25
PATCH> REPLACE/INSTRUCTION LA$TIMEOUT_VALUE
OLD> 'PUSHL      I`#00000002'
OLD> EXIT
NEW> 'PUSHL      I`#0000003C'
NEW> EXIT
PATCH> UPDATE
PATCH> EXIT
```

Substitute the desired timeout value for the "0000003C" in the example above. When you reboot, the system loads the new copy of the driver containing the new timeout value.

### 3.4.4 Processor Register Definition Symbols

The following internal processor registers (IPRs) are no longer common to all VAX processors. Their definitions have been removed from \$PRDEF.

- NICR—Interval Clock Next Interval Register
- ICR—Interval Clock Interval Count Register
- TODR—Time of Day Register
- ACCS—Accelerator Control Status Register
- ACCR—Accelerator Reserved
- PME—Performance Monitor Enable

New CPU-specific processor register definition macros have been added to STARLET.MLB to define the CPU-specific IPRs. The macro names have the format \$PRxxxDEF, where xxx is the number associated with the processor (for example, \$PR780DEF will define PR780\$\_ACCS).

The only legitimate references to these registers are in CPU-dependent code. These references must use the new CPU-dependent IPR definitions.

Note, however, that time-wait loops must never directly reference the clocks. They *must* use a time-wait macro that is independent of the CPU. A new, CPU-independent, time-wait macro called TIMEDWAIT has been added to LIB.MLB. This should eliminate any need for hand-coded, time-wait loops.



# Corrected Problems, Restrictions, and Notes

## 3.4 System Programmer Information

There should no longer be any references to PR\$\_ICR or PR\$\_TODR to do time-wait loops. TIMEDWAIT allows for up to six special-purpose instructions to be placed in its timing loop. However, the loop timing is based on having one BITx and one conditional branch instruction embedded within the loop. Therefore, if you have a loop with no embedded instructions, you may want to adjust the TIME argument accordingly. A good rule of thumb is to add 25 percent to the **time** argument if the loop has no embedded instructions.

To reference PR\$\_TODR for logging purposes, use EXE\$READ\_TODR and EXE\$WRITE\_TODR. These two, new, loadable, CPU-dependent routines have been added for code that must reference this type of value.

### 3.4.5 NETACP Verification of MOP Messages

Version 4.7 of the network ancillary control program (NETACP) performs some verification before it starts up a maintenance operation module (MOM) process to service an incoming maintenance operation protocol (MOP) request. The *VAX/VMS Networking Manual* discusses these topics.

NETACP starts up a MOM process under any one of the following conditions:

- The request is not directed to a multicast address.
- The source node specified in the MOP request is defined in the volatile node database.
- The MOP message requests an operating system and contains the software identification of the file to be loaded.
- The MOP request is not a program load.

If NETACP does not start up a MOM process, it generates an event message of type 0.7 (aborted service request, line open error). The Ethernet address of the source node is also displayed with the message.



# A

## VAX/VMS Version 4.7 Update Description

This appendix contains a listing of the patches, new images, and miscellaneous fixes contained in the Version 4.7 update kit. The following listing is obtained from the file SYS\$UPDATE:VMS047.TXT, which is produced by the installation procedure if you select option 2 or 3 in step 4 of Section 1.4.

**Note:** If you upgraded a VMS Version 4.6A system, the AUTOGEN patch (number 3) will not appear in your listing. Version 4.6A contains this patch.

### 1) ADARTL (patch image)

```
! ADARTL.EXE
!
!   ECO01   SBL       7-JUL-1987
!           Module: ADA$POWER (X-2)
!
!           Properly detect CONSTRAINT_ERROR if exponentiation of
!           a SHORT_INTEGER or SHORT_SHORT_INTEGER would overflow
!           the base type in VAX Ada programs.
!
```

### 2) AGEN (miscellaneous fix)

```
! AUTOGEN.VUG
!
!   ECO01   GHCO001    24-Aug-1987
!           MODULE: AUTOGEN
!           Apply the PE5 checksum fix only on V4.6 systems since the fix
!           is already in V4.6A.
!
```

### 3) AUTOGEN (edit text file)

```
! AUTOGEN.COM
!
!   ECO01   GHCO001    14-Aug-1987
!           MODULE: AUTOGEN
!           1. Set PE5=2 on LAVC members with QNAs to turn on receive
!              packet checksumming.
!           2. Guarantee that VMSIMAGES.DAT gets created on LAVCs.
!           3. Consider VAX8530 a big boot node in LAVCs.
!
```

### 4) BACKUP (patch image)

```
! BACKUP.EXE
!
!   ECO001  KGWE010    3-Jun-1987 00:04
!           Change version number to V4.7.
!
```

# VAX/VMS Version 4.7 Update Description

## 5) CLUSTRLOA (new image)

```
! CLUSTRLOA.EXE
!
! ECO01 WES 27-May-1987
!
! Module: CNXMAN
! Change the protocol version and cluster version number for
! V4.7. Prevent communication with V4.5 and previous.
!
! Module: FALMAN
! Remove the failover table that was used for compatibility
! with V4.5.
!
! Module: DISTRKI
! Begin filling in some new fields in the standard information
! request message.
!
! WES 22-Jun-1987
!
! Module: CSPCALL
! Indicate operation complete before sending a response
! message to prevent waiting for piggy-back acknowledgments.
!
! ECO02 WCY 18-Sep-1987
!
! Module: CONMAN
! Fix VAXcluster shared resource problem
!
! Module: CONUTIL
! Fix VAXcluster shared resource problem
!
! Module: CNXMAN
! Fix VAXcluster shared resource problem
!
! Module: QUORUM
! Fix VAXcluster shared resource problem
!
! Module: CLUSTER.SDL
! For the fix of VAXcluster shared resource problem:
! Add definitions for ENTR and JMSG new messages.
! Add new $CLUCFDEF and define current protocol ECOLEVEL
! in $CNCTDEF.
```

## 6) COBRTL (miscellaneous fix)

```
!
! COBRTL.EXE
!
```

## 7) COBRTL (new image)

```
! COBRTL.EXE
!
! ECO01 DJM1001 15-May-1987
! MODULE: COBRTL
! Replace entire COBRTL image. This COBRTL supports the
! COBOL 85 standard. It is being provided in a maintenance
! release in order to greatly facilitate ANSI validation.
```

# VAX/VMS Version 4.7 Update Description

## 8) CSP (new image)

```
! CSP.EXE
!
!   ECO01   WCY           18-Sep-1987
!
!   Module: CSP.B32
!   Add the call to routine CSP$$CLUSTER_FILE
!   for the fix to VAXcluster shared resource problem.
!
!   Module: CSPCLUFILE
!   This new module is to handle the open/create of the
!   CLUSTER.DAT file.
```

## 9) CTDRIVER (patch image)

```
! CTDRIVER.EXE
!
!   ECO01   JLV0001       28-May-1987
!   MODULE: CTDRIVER.EXE
!   Change CLRL to CLRW.
```

## 10) DEBUG (patch image)

```
! DEBUG.EXE
!
!   ECO001   RT           July 6 1987
!   Fix control-Y-DEBUG problem.
!
```

## 11) DSDRIVER (miscellaneous fix)

```
! DSDRIVER.MSKEXE
!
!   SD0001           25-Aug-1987
!   MODULE: DUSHADOW.MAR
!   When HSC's failover shadow sets, if all member units
!   do not appear in the same 1 second interval on the
!   second HSC and if one of the units that does appear
!   is the highest numerical unit number in the set, disks
!   will be dropped from the shadow set.
!
```

## 12) ERFCTLSHR (patch image)

```
! ERFCTLSHR.EXE
!
!   ECO01   RAP0270       27-Jul-1987
!   MODULE: CONVERT.B32
!   - Add 1 longword to the V5.0 header size.
!
```

## 13) ERFLIB (miscellaneous fix)

# VAX/VMS Version 4.7 Update Description

## 14) ERFPROC1 (patch image)

```
! ERFPROC1.EXE
!  
! ECO01  AJM0157          25-May-1987
!          MODULE: MSCPDTDSP.B32
!          - Add TA79 recognition.
!  
! ECO02  AJM0160          26-May-1987
!          MODULE: STSEVENT.B32
!          - Add TK70 recognition.
!          - Correct TK50/TK70 data error limits
!          MODULE: TKXXDVDP.B32
!          - Correct Tk50/Tk70 drive fault code limits
!
```

## 15) ESDRIVER (patch image)

```
! ESDRIVER.EXE
!  
! ECO01  DAG0001          18-Jun-1987
!          MODULE: ETHERNET_CMN_RTN.MAR
!          Fix the SQUEEZ_MULTI routine so that operates properly.
!
```

## 16) ETDRIVER (patch image)

```
! ETDRIVER.EXE
!  
! ECO01  DAG0001          18-Jun-1987
!          MODULE: ETHERNET_CMN_RTN.MAR
!          Fix the SQUEEZ_MULTI routine so that operates properly.
! ECO02  DAG0065          26-Jun-1987
!          MODULE: ETDRIVER.MAR
!          Fix the 802 cannot receive problem.
! ECO03  DAG0073          07-Oct-1987
!          MODULE: ETDRIVER.MAR
!          Flush cached receive buffers after protocol shutdown.
! ECO04  DAG0073          07-Oct-1987
!          MODULE: ETDRIVER.MAR
!          Increase transmit and command timeout values from 3 to 5.
! ECO05  MJC0105          27-Oct-1987
!          MODULE: ETDRIVER.MAR
!          Fix NOIOCHAN and INSFMEM problem in ETDRIVER. This problem
!          was caused by insufficient clean up of a protocol termination.
!
```

## 17) F11BXQP (new image)

```
! F11BXQP.EXE
!  
! ECO02  KGW00109         1-Jul-1987
!          MODULE: MODIFY
!          Replace module to return correct file protection
!          for a file re-protected against its owner.
!
```

## 18) HSCPAD (patch image)

```
! HSCPAD.EXE
!  
! ECO01  AJM0191          30-Sep-1987
!          MODULE: HSCPAD.MAR
!          - Initialize logfile buffer descriptor length field.
!
```



# VAX/VMS Version 4.7 Update Description

## 19) JOBCTL (new image)

```
! JOBCTL.EXE
!
!           RG           7-Jul-1987
!
! Performance Improvement:
! A performance improvement was made to the Job Controller
! in the area of queue file clean up. When a node leaves
! the cluster all the surviving Job Controllers react to that
! event. This fix cuts down on some unnecessary redundancy.
!
!           Module: BUFFERS.B32
!           The queue file lock is now ENQed with the lock value
!           block bit set. Also, the SS$_VALNOTVALID error is handled.
!
!           Module: INITQUEUE.B32
!           Again, ENQing the queue file lock with the lock value block
!           bit set.
!
!           Module: CONTROL.B32
!           Instead of just doing "clean up" for a node leaving the
!           cluster a decision based on the contents of the lock value
!           block is made as to whether or not it should be done.
!
!           File: JOBCTLDEF.REQ
!           The lock value block is added to own storage.
!
```

## 20) LATCP (new image)

```
! LATCP.EXE
!
!   ECO01   JFC0015           25-Jun-1987
!           MODULE: LATCP
!           Move message array from kernel mode stack to own storage.
!
```

## 21) LATSYM (new image)

```
! LATSYM.EXE
!
!   47-015  WMF0003           14-Oct-1987
!           Module: DISPATCH
!
!           Fix PSM$REPORT to supply the real error status to the
!           output completion routine.
!           Have [WRITE_COMPLETION] dispatch state look at error returned
!           from [WRITE] and have it pass on the error status to [READ].
!           Force PSM$V_RESET in case a hard error was detected on an
!           output function.
!
!           ECO01   JFC0014           3-Jun-1987
!           MODULE: LAT$$OUTPUT
!           Fix timing window that caused queue to pause while
!           printing multiple short files to a DECserver.
!
```

# VAX/VMS Version 4.7 Update Description

## 22) LTDRIVER (patch image)

```
! LTDRIVER.EXE
!  
! ECO01 CAM0017 12-May-1987
! MODULE: LTDRIVER
! Use INCONSTATE instead of BADMCKCOD as bugcheck reason code.
!  
! ECO02 CJA0003 14-May-1987
! MODULE: LTDRIVER
! Fix 8800 crash when you use the LATCP command
! STOP NODE.
!  
! ECO03 CJA0004 27-May-1987
! MODULE: LTDRIVER
! Fix rare crash in LTDRIVER when stopping a circuit.
!  
! ECO04 CJA0005 27-May-1987
! MODULE: LTDRIVER
! Fix some hung port problems associated with
! "repeat create of slot by server" error.
!  
! ECO05 CJA0006 29-Aug-1987
! MODULE: LTDRIVER
! In LOOP_ABORT, just turn around a STOP SLOT using the
! received SRCID. DON't harm the target UCB since it's
! probably not the guilty party.
!  
! ECO06 CJA0007 13-Oct-1987
! MODULE: LTDRIVER
! Fix system crasher on CONNECT and DISCONNECT functions
! when we get a virtual UCB instead of physical.
```

## 23) MOM (patch image)

```
! MOM.EXE
!  
! ECO001 TRC0118 30-Sep-1987
! MODULE: MOMMOPLIO
! Inhibit attempt to read the NI header if a point-to-point
! circuit is being used.
!  
! ECO002 TRC0119 30-Sep-1987
! MODULE: MOMSERVIC, MOMMOPLIO, MOMLOAD
! Add code to properly handle the initial MOP message on
! point-to-point circuits.
!  
! ECO003 TRC0120 30-Sep-1987
! Format status text in error messages/events.
! TRC0121 30-Sep-1987
! Ensure loop message length is correct for circuit loopback.
! TRC0122 30-Sep-1987
! Allow graceful exit from circuit loopback.
!
```

# VAX/VMS Version 4.7 Update Description

## 24) MONITOR (patch image)

```
! MONITOR.EXE
!
! ECO001 SAH 15-Sept-1987
! MONITOR\RECORD_HEADER
! Record initial system information records only if the
! node is currently active.
!
! ECO002 SAH 18-Sept-1987
! Ignore status returned from LIB$FREE_VM in cleanup
! routines.
!
! Set the correct ECO level
!
```

## 25) MTAAACP (patch image)

```
! MTAAACP.EXE
!
! ECO01 KGW00114 7-Jul-1987
! MODULE: HEADER
! Issue a reposition-to-zero to workaround a TK50
! limitation with serious exception handling.
```

## 26) NETACP (patch image)

```
! NETACP.EXE
!
! ECO 01 Reserved by Terry
!
! ECO 02 WXD0031 18-Mar-1987
! MODULE: NETDLLTRN - code
! Fix NETNOSTATE from processing a CXB queued for
! an adjacency that has since been reused.
!
! ECO 03 LY0003 21-MAY-1987
! MODULE: NETCONFIG - tables impure psect
! Disallow the MAX BROAD ROUTERS parameter from changing
! while DECnet is running
!
! ECO 04 TH0004 25-MAY-1987
! MODULE: NETPROCRE - code
! Allow for both old and new link Id formats in during the
! rolling upgrade from V4.7 to V5.0.
! This entails not allowing the top bit in the link ID to
! be set - this corresponds to the new format cluster alias flag.
!
! ECO 05 WXD0037 15-Jun-1987
! MODULE: NETCNFDLL - code
! Don't change the default protection of any device except
! for Ethernet devices.
!
! ECO 06 RBH0001 18-JUN-1987
! MODULE: NETDLLTRN - code
! When the number of DLM/X.25 circuit recalls wrap around
! from 255 to 0, treat number 0 as the limit to stop making
! call.
!
! ECO 07 RBH0002 29-JUN-1987
! MODULE: NETCONNECT
! Fix cluster alias problem involving a DECSA router box.
! The fix is not to accept the offered segment size, but
! use the executor segment size.
```

# VAX/VMS Version 4.7 Update Description

```
!
! ECO 08 WXD0042      14-Sep-1987
! MODULE: NETCLUSTER
!       Fix cluster alias problems which occur when a cluster
!       member runs out of alias logical links.
!
! ECO 09 TRC0124      1-Oct-1987
! MODULE: NETCNFDLL
!       Fix X-18N3 so ignoring of RIS timer is done if circuit is in
!       MOP mode rather than in autoservice substate.
!
! ECO 10 TRC0126      1-Oct-1987
! MODULE: NETCONFIG
!       Modify version number for V4.7.
!
! ECO 11 RBH0003      06-OCT-1987
! MODULE: NETCONNECT
!       Fix cluster alias problem involving a DECSA router box.
!       If a router in the cluster accepts an incoming connect,
!       NETACP uses the large buffer size. The fix is to not
!       treat the cluster router as a special case.
!
! ECO 13 Reserved by Sherry
!
27) NETDRIVER (patch image)
! NETDRIVER.EXE
!
! ECO 001 TH001      25-MAY-1987
! MODULE: NETDRVNSP.MAR
!       Allow for both old and new link Id formats in during the
!       rolling upgrade from V4.7 to V5.0.
!       This entails checking the cluster alias id flag in both
!       locations in the Id. and then extracting the cluster node
!       index accordingly.
!
! ECO 002 RBH0001      26-MAY-1987
! MODULE: NETDRVXPT.MAR
!       Fix bug in endnode cache to remove stale entry when
!       node is switched from an Ethernet circuit to other
!       circuit.
!
! ECO 003 WXDNNNN      16-Jun-1987
! MODULE: NETDRVXPT.MAR
!       Clear congestion flag in short format messages to prevent
!       aged packet loss.
!
! ECO 004 SAS0018      17-Jun-1987
! MODULE: NETDRVSES.MAR
!       Fix timing window bug in io$_deaccess processing.
!       Clear the xwb$m_flg_sdt flag to dismiss transmission
!       of suspended threads.
!
! ECO 005 SAS0025      05-Oct-1987
! MODULE: NETDRVQRL.MAR
!       Create a second patch area in the obsolete NETDRVQRL module.
!
!       BECAUSE PATCHES MAY BE APPLIED TO PARTIALLY PATCHED IMAGES
!       IT IS NECESSARY FOR EVERY ECO AFTER ECO 005 TO EXPLICITLY
!       DO A "SET PATCH NETDRVQRL+173" WITHIN THEIR SET ECO CONTEXT.
!
```



# VAX/VMS Version 4.7 Update Description

```
! ECO 006 SAS0024                      30-Sep-1987
! MODULE: NETDRVNSP.MAR
! Fix bug in receive IO$M_MULTIPLE code on clone CXB failure.
! Fix bug in ss$_dataoverun processing of OVF state transitions.
!
```

## 28) NODRIVER (new image)

```
! NODRIVER.EXE
!
! MJC                      29-Sep-1987
!
! This version of NODRIVER is a replacement of the current
! NODRIVER. This driver contains fixes to correct problems
! in receive message processing.
!
```

## 29) PEDRIVER (miscellaneous fix)

```
! PEDRIVER.MSKEXE
!
! ECO02 JAY                  20-Jul-1987
! Fix PE_CONFIG to properly handle an invalid event in
! in its state table processing. Also, add more CXBs.
!
! ECO01 KP                   16-Jun-1987
! Fix PEM_CC so that, if the password in a channel control
! message doesn't match the cluster password, then the node
! that sent the message is ignored.
!
```

## 30) RMS (patch image)

```
! RMS.EXE
!
! ALL PMV0054                08-Jul-1987
! MODULE: (none)
! Modify all existing ECOs to check for existence of
! ECO 96. If present, this indicates that RMS Journaling
! has been installed, and the ECO should not be applied.
!
! ECO 1 PJH                  07-Jun-1987
! MODULE: RMOSHARE
! Backout use of blocking ASTs on file locks introduced in
! V4.4.
!
! ECO 2 LSS                  10-Jun-1987
! MODULE: RMORECLCK
! Prevent all reclamation of RU deleted UDRs, RRVs, and SIDRs
! by always returning a zero status from RM$QUERY_PROC.
!
! ECO 3 PJH                  19-Jun-1987
! MODULE: RM1CONN
! For now, turn off Deferred Write when a sequential file is
! opened for shared append access.
!
! ECO 4 JEJ                  26-Jun-1987
! MODULE: RM1PUT
! $PUT operations with UIF set to the current record after a
! $RELEASE operation would fail with RMS$_RNL.
!
```

# VAX/VMS Version 4.7 Update Description

```
! ECO 5  JWT                      29-Jun-1987
!      MODULE: RM3KEYDSC
!      Tighten up the check for supported key types when an indexed
!      file is opened.
!
! ECO 6  SADO43                    06-Jul-1987
!      MODULE: RMOCACHE
!      Cached buffers are only valid for BDB$W_NUMB bytes.  If
!      a request to read more than the cached bytes, the remainder
!      must be read from disk.
!      MODULE: RM1NXTBLK
!      To eliminate excessive incremental reads form the change to
!      RMOCACHE, issue cache requests thru HBK, rather than EBK.
!
! ECO 7  LSS0058                  29-Sep-1987
!      Prevent a problem where a change in the state of the FAB$V_CIF
!      bit during a $CREATE operation on an indexed file can result
!      in the over-writing of the prolog, key, and area descriptors
!      for an existing file as if it were just created.
!
!      MODULE: RMOCRECOM
!      Set IFB$V_CIF if about to do create-if access $QIO.
!      Bit IFB$V_CIF is the spare IFAB book keeping bit IFB$V_TEF+1.
!
!      MODULE: RM3CREATE, RM3FACE
!      Check IFB$V_CIF instead of FAB$V_CIF to determine if create-if
!      was attempted.
!
```

## 31) SATELLITE\_CONFIG (edit text file)

```
! SATELLITE_CONFIG.COM
!
! ECO01  CJB027                    28-Sep-1987
!      Correct deletion of NETNODE_REMOTE.DAT.
!
```

## 32) SECURESHR (patch image)

```
! SECURESHR.EXE
!
! ECO01  DDP0230                    06-OCT-1987  13:41
!      MODULE: SYSUAISRV
!      Miscellaneous bug fixes.
!
```

## 33) SET (patch image)

```
! SET.EXE
!
! ECO01  LMP0444                    22-May-1987
!      MODULE: SETFILE
!      This change modifies which (RMS) device name is used when
!      assigning a channel for the actual QIOs.  Use of the DEV device
!      name caused problems when dealing with search lists.  (DVI is
!      the correct field.)
!
```

# VAX/VMS Version 4.7 Update Description

## 34) SMBSRVSHR (new image)

```
!++
! SMBSRVSHR.EXE
!
!   ECO0001 MTR0001      13-July-1987
!
!   This image replacement fixes 4 specific problems.
!   Determination of printable characters.
!   Page accounting when printing /NOFEED.
!   Print documents from queues with form attribute /SHEET_FEED.
!   Device control libraries and main input files left open.
!--
```

## 35) STABACKUP (patch image)

```
! STABACKUP.EXE
!
!   ECO011  KGWE0011      3-Jun-1987 00:04
!           Change version number to V4.7.
!
```

## 36) SYS (patch image)

```
! SYS.EXE
!
! The following patches are part of the mandatory update for VAX/VMS Version 4.6.
!
!   ECO80    KFG0001      06-Jul-1987
!           MODULE: SYS.EXE
!           Set system version number to "V4.6".
!
! All patches related to the VAX/VMS Version 4.7 maintenance release should be added
! after this point. This is to insure that all of the patches for the VAX/VMS Version
! 4.6 mandatory update are applied prior to any of the 4.7 related patches.
!
!   ECO85    LMP0450      21-Apr-1987
!           MODULE: SYSCHKPRO
!           Reinitialize ACE pointer (R1) when checking a multi-
!           segment ACL for audit ACEs.
!
!   ECO86    LMP0450      6-May-1987
!           Make sure we don't branch into the middle of an
!           instruction.
!
!   ECO87    WMC0087      26-May-1987
!           MODULE: SYSLKWSET
!           Make SCNWSLX scan backwards from WSNEXT, then forwards.
!
!   ECO89    WMC0089      25-Jun-1987
!           MODULE: PHDUTL
!           Correctly check PHD size in MMG$ALCPHD.
!
!   ECO91    JLW0091      07-Jul-1987
!           Change system version number to X4.7 (field test version)
!
!   ECO92    JLW0091      05-Oct-1987
!           Change system version number to Y4.7 (ft2)
!
!   ECO93    SHD0023      27-Jul-1987
!           Fix IOPERFORM allocate routine to check for null UCB
!           pointer
!
```

# VAX/VMS Version 4.7 Update Description

```
! ECO94   SHD0026      03-Aug-1987
!         Fix ECO_66 to account for V4.7 MSCP server data
!         structures.
!
! ECO95   LJK4036      11-Aug-1987
!         Remove ECO 66 as part of backing out the V4.7 MSCP server.
!
! ECO99   JLW0091      28-Oct-1987
!         Change system version number to V4.7
!
! Define the following symbols so that the patches can be reapplied.
```

## 37) SYSINIT (new image)

```
! SYSINIT.EXE
!
! ECO01   WCY          18-Sep-1987
!
!         Module: SYSINIT.MAR
!         Add reading of CLUSTER.DAT file in SIP_CLUSTER_INIT
!         routine for the fix to VAXcluster shared resource
!         problem.
```

## 38) SYSLOA790 (new image)

```
! SYSLOA790.EXE
! ECO01
!   Module: MCHECK790
!         New machine check handler. Fixed some typo's
!         that made an incorrect mask for abort bits.
!         Looked in the correct register for PROC ABORT
!         Allowed the ability to retry instructions
!         for more failure scenarios.
```

## 39) SYSLOA8NN (patch image)

```
! SYSLOA8NN.EXE
!
! ECO01   CBD0125      1-Jul-1987
!         MODULE: SYSLOA8NN
!         Add missing # to TIMEDWAIT in STARTIO
!
! ECO02   CBD0161      27-Oct-1987
!         MODULE: SYSLOA8NN
!         Remove JSB to output of cache off due to errors message.
!         Cache being turned off will not be reported.
!
```

## 40) TPUSHR003 (patch image)

```
! TPUSHR.EXE
!
! ECO03   BMT0001      14-Sep-1987
!         MODULE: TPUSHR.EXE
!
!         Allow TPU to send any characters in the range A1-FE to
!         the terminal.
!
```



# VAX/VMS Version 4.7 Update Description

## 41) TTDRIVER (new image)

```
! TTDRIVER.EXE
!
!           JJF           29-Sep-1987
!
!   A new TTDRIVER is provided in the VMS V4.7 kit. This TTDRIVER
!   has a change so that VMS workstations using terminal emulator
!   windows will work correctly.
!
```

## 42) TUDRIVER (patch image)

```
! TUDRIVER.EXE
!
!   ECO01   MAS0154       16-Jun-1987
!           MODULE: TUDRIVER
!           Allow dismounting of tape drives on non-functioning
!           controllers to proceed.
!
!   ECO02   PRD0346       04-Jun-1987
!           MODULE: TUDRIVER
!           Modify AUTOPACK_ACK to retry a request rather
!           place it on the I/O pending queue if in
!           single-stream mode.
!
!   ECO03   MAS0156       7-Jul-1987
!           MODULE: TUDRIVER
!           Do not update position information on invalid
!           modifier processing.
!
```

## 43) TVDRIVER (new image)

```
! TVDRIVER.EXE
!
!   ECO02   RNH           14-Jul-1987
!           Module: TVDRIVER
!           Return correct record length when returning SS$_WASECC.
!
!   ECO01   RNH           07-Jul-1987
!           Module: TVDRIVER
!           Fix assumptions which prevented DMA if records were >12KB.
!           >12KB writes disabled (SS$_BADPARAM) to aid in V4.7 stability.
!           Fix bugs which omitted setting BOT in some situations and
!           which omitted logging correctable ECC errors. Always include
!           IRP trace code, but switch off its execution. Return
!           SS$_MEDOFL for timeouts during the SCSI Selection phase.
!
```

## 44) UETDISK00 (new image)

```
! UETDISK00.EXE
!
!           EJM           29-Jul-1987
!
!           Module: UETDISK00.MAR
!           Change initial file creates to seven blocks in one shot
!           mode (from 5% of free space) to speed up testing.
!
```

# VAX/VMS Version 4.7 Update Description

## 45) UETINIT00 (patch image)

```
! UETINIT00.EXE
!  
! ECO01 LDJ0001 11-Jun-1987
!  
! MODULE: UETINIT00.MAR
!  
! Do not report an error if there is more than the required
!  
! amount of quotas in the SYSTEST account.
```

## 46) UETINIT01 (new image)

```
! UETINIT01.EXE
!  
! EJM 27-Jul-1987
!  
! Module: UETINIT01.MAR
!  
! Allow user specified timeout for init stage. The logical
!  
! (UETP$INIT_TIMEOUT) must be specified in delta time format
!  
! (default "0 00:06:00").
```

## 47) UISSHR (new image)

```
! UISSHR.EXE
!  
! ECO01 JJF0001 7-Jul-1987
!  
! MODULE: UISSHR
!  
! Replace entire UISSHR image. This updates the UISSHR image
!  
! with all entry points as of Version 3.2 of VWS.
```

## 48) VAXCTRL (miscellaneous fix)

```
!  
! VAXCTRL.OLB
!  
!
```

## 49) VAXCTRL (patch image)

```
! VAXCTRL.EXE
!  
! ECO01 CHH0061 01-jun-1987
!  
! Module: C$MALLOC (061)
!  
! Incorrectly zeroing out MRF block in malloc/free
!  
!  
! The following symbols applies to ECO 01
!
```

## 50) VAXCTRLG (patch image)

```
! VAXCTRLG.EXE
!  
! ECO01 CHH0061 01-jun-1987
!  
! Module: C$MALLOC (061)
!  
! Incorrectly zeroing out MRF block in malloc/free
!  
!  
! The following symbols applies to ECO 01
!
```

# VAX/VMS Version 4.7 Update Description

## 51) VMB (new image)

```
! VMB.EXE
!
! ECO01 EJL0160 06-Jun-1987
! MODULE: PABTDIVR
! Correct double deallocation error and increase retry counts.
! This ECO improves the ability of the boot driver to write a
! crash dump to an HSC disk over the CI.
!
```

## 52) VPM (patch image)

```
! VPM.EXE
!
! ECO001 SAH 04-June-1987
! Module: PSLREMOTE\PSL$REMOTE_CALL
! A check to make sure that all incoming requests to the Monitor
! server process were compatible with the local version needs
! to be modified to handle V5 requests. The V5 code changed after
! this code was added to V4.6. Most of the V4.6 code added is
! obsolete and is being removed
!
! Set the ECO level...
```

## 53) XGDRIVER (new image)

```
! XGDRIVER.EXE
!
! MJC 29-Sep-1987
!
! This version of XGDRIVER is a replacement of the current
! XGDRIVER. This driver contains fixes to correct problems
! in receive message processing.
!
```

## 54) XQDRIVER (patch image)

```
! XQDRIVER.EXE
!
! ECO01 DAG0001 03-Jun-1987
! MODULE: XQDRIVER.MAR
! Do not ignore transmit packets that get errors. Instead,
! remove them from the ring and let the rest of the transmit
! code handle the error.
!
! ECO02 DAG0002 18-Jun-1987
! MODULE: ETHERNET_CMN_RTN.MAR
! Fix the SQUEEZ_MULTI routine so that operates properly.
```

## 55) YFDRIVER (new image)

```
! YFDRIVER.EXE
!
! ECO01 FAK 07-JULY-1987
!
! Replace YF$ABORT with V4.4 code the new YF$ABORT logic added
! in V4.6 can cause device to start producing DEVICE TIMEOUT
! errors.
!
```





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